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**VALUE DETERMINATION OF CASE MANAGEMENT
IN HOME HEALTH NURSING**

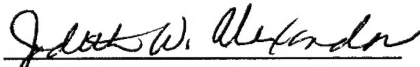
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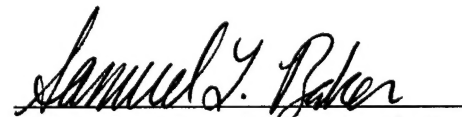
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DEDICATION

To my father, Raymond R. Carnaghi, and my son, Raymond Eschol Register. My father was an accomplished educator, scholar, and friend to countless students, and wonderful father to me. My son's brief life ended before he had a chance to live. Words cannot express the love that exists between a father and daughter, and a mother and son. I only regret my father and son did not live long enough to celebrate the attainment of this goal.

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I want to express a special thanks to my mother, Mary L. Carnaghi, who is a constant source of inspiration for me. The value system I learned from my parents, which emphasizes life-long learning, integrity, and the pursuit of excellence - regardless of the task, has provided a reliable and irrepressible compass throughout my life.

I am extremely grateful for the technical expertise provided by my sister, Annie Enzweiler. Her knowledge and skills related to computer-generated spreadsheets were pivotal to this study. Her enthusiasm and willingness to provide assistance was greatly appreciated, but above all else; we had fun working together.

I want to recognize my mother-in-law, Ruby Register, who provided unparalleled "Southern Cuisine" and warm hospitality during our breaks. I also want to thank my brother-in-law and sister-in-law, Freddy and Kathy Register, for their ardent support and understanding. I owe a special thanks to my brother, Joe Carnaghi, who helped to keep things in perspective during this hectic time. I also want to recognize my aunt, Helen Muscorella, who opened her heart and home to us and provided the impetus for selecting the University of South Carolina.

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ABSTRACT

The proliferation of managed care plans for Medicare patients has fueled new interest in articulating the value of case management in home care services. Managed care is forcing health care organizations to cut costs and services that cannot demonstrate value to customers. To ensure viability, nurses must demonstrate the value of case management in home health. This descriptive correlational study demonstrates the value of case management by examining patient outcomes in the context of each patient's unique life circumstances. Value is determined by examining the relationship between daily hassles; case management organizational structure; social support; and subsequent impact on patient care outcomes, such as quality of life. This study, based on Neuman's Systems Model, uses the Value Indicator Model to articulate the value of case management in home health using multiple regression techniques. This sample in this study was comprised of 23 home health clients with congestive heart failure (CHF), who were receiving home health care services from a total of 15 different nurse case managers, from three of the districts within the South Carolina Department of Health and Environmental Control (DHEC) Home Health Care Services (HHCS). According to this study, the greatest value of nurse case management in home health care is achieved when the nursing organizational structure of formalization is characterized as low or organic and when the severity of

client daily hassles are minimized. Nurse leaders face critical challenges as a demand for tangible evidence to demonstrate the value of nurse case management persists. To ensure continued viability, nurses must clearly demonstrate the value of case management services within the context of home health care. Further research designed to articulate the value of nurse case management in home health is required.

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Chapter I

INTRODUCTION

The systematic transitioning of employee health benefits from traditional fee-for-service insurance to managed care has revolutionized the health care industry in the United States (U.S.). Over 56 million people in the US receive health care in a health maintenance organization (HMO) (Flarey & Blancett, 1996). More than 90% of the employed population are involved with some type of managed care (Friedman, 1995). The one-time savings associated with shifting payment systems have vanished. The dramatic proliferation of managed care plans has led to fierce price competition for market shares among managed care plans (Thorpe, 1997). More recently, visionary employers seek more than cost-effective care. Employers demand quality and value in health services as well (Fraser, 1997).

One of the most highly acclaimed structural improvements to evolve from the managed care movement is the integrated delivery system. Fully integrated systems incorporate comprehensive health care needs across the continuum of care. Integrated health care delivery is supported and driven by case management models and systems (Flarey & Blancett, 1996). A fully integrated system

combines group financing with all aspects of health care such as hospitals, clinics, home care, long-term care, and pharmacies. In integrated systems, all health service organizations operate under capitated rates, and risk is shared among all participants (Flarey & Blancett).

Home health care is unquestionably an integral part of a fully integrated health care delivery system. Home care also represents the fastest growing segment in the health service industry (NAHC, 1997).

A significant portion of the growth in the home care industry can be attributed to a phenomenon known as the "graying" of America. Birchfield (1996) indicates the number of Americans over the age of 65 is growing more rapidly than the population as a whole. Elderly clients represent a priority population in the home care industry.

The enactment of Medicare in 1965 greatly accelerated growth in the home health industry (NAHC, 1997). NAHC reports that 1,100 home care agencies operated in 1963. As of December 1996, NAHC identified a total of 20,215 home care organizations operating within the U.S. and U.S. territories. Half of the operating agencies (10,027) are Medicare-certified home health agencies. In addition, NAHC identified 2,154 Medicare-certified hospices, and 8,034 home health agencies, home care aide organizations, and hospices that do not participate in Medicare (NAHC).

An increasingly competitive health care market has generated incentives for home care agencies to join managed

care provider networks. In 1996, almost one in every three Medicaid beneficiaries enrolled in managed care. Medicare managed care enrollment has progressed at a less vigorous pace. As of January 1997, an estimated 13% of Medicare beneficiaries were affiliated with Medicare managed care (NAHC, 1997).

The Health Care Finance Administration (HCFA) estimates that 38.6 million aged and disabled persons are currently enrolled in Medicare. Over 3.9 million enrollees were expected to receive home health services in 1997, twice the number of home health recipients in 1990. Currently, an estimated 9 to 11 million Americans require home care services (NAHC, 1997). Medicare is the largest single payer source of home care services. Over half of all home care service clients rely on Medicare for payment (NAHC).

For the period of 1990-1997, Medicare home care expenditures increased from \$3.9 billion to \$20.5 billion. Most of the increased spending is attributed to an increase in number of client visits, from 70 million in 1990 to an estimated 306 million in 1997 (NAHC, 1997).

Unprecedented growth and dramatic increases in Medicare spending for home health care prompted HCFA to propose legislation to curtail growth in the home care industry. The Balanced Budget Act of 1997 (BBA) introduced a new reimbursement schedule, known as the interim payment system (IPS), which provides for a per-beneficiary limit,

designed to reduce growth in Medicare home health expenditures (NAHC, 1997).

Under IPS, agency payments are restricted to the lowest of the agency's allowable costs, per-visit cost limits, or per-beneficiary limits (NAHC, 1997). Revised reimbursement patterns prescribed by IPS has created a tremendous strain on home health organizations, which operate within tightly controlled budgets. Drastic cuts in reimbursement imposed by IPS have resulted in withdrawal of non-reimbursable services to clients (NAHC, 1998).

Many health care organizations faced with a steady decline in available health care dollars, increasing competition, and increasing federal regulations and restrictions have implemented case management strategies to control and reduce costs. Case management is a patient-centered program that embraces cost containment (Windle & Houston, 1996).

Protracted emphasis on cost-effectiveness and new challenges brought about by IPS underscore the need to articulate the value of case management in home health care (Hendricks & Baume, 1997; NAHC, 1997). Nurses must act proactively to quantify the value of case management in home health care as a vital part of integrated health care delivery systems (Hendricks & Baume).

Health care organizations must make difficult economic decisions concerning the types of services provided and associated costs. Programs that cannot demonstrate high-

value risk downsizing or exclusion (Oberman, 1994). The goal of all health care services is to ensure good patient health outcomes. When health outcomes are compared with the costs associated with delivery of care, patients, payers, and others make judgements about the value of the health care services (Lamb, Donaldson, & Kellogg, 1998).

As the demand for home health services increases, the need to prioritize research areas in home health care also increases (Albrecht, 1992). Outcomes and costs of home care, along with the analysis of policies and reimbursement patterns impacting home health, represent the top three research priorities in home health care (Albrecht).

To ensure viability, nurses must clearly articulate the value of case management services within the context of home health care. Case managers must demonstrate meaningful quality measures that establish a clear relationship between case management interventions, favorable patient outcomes, and cost reduction (Arford & Allred, 1995).

Purpose

A knowledge gap exists related to value determination of nurse case management and selected patient outcomes in the area of home health. This study, based on a Neuman's (1995) Systems Model, attempts to fill the gap by examining patient outcomes in the context of each patient's unique life circumstances. Outcomes of case management are relative to other key contributing factors that are central

to each patient's life circumstances, such as varying degrees of social support and problems that occur in daily life, otherwise known as daily hassles. The nurse case manager meets the patient within the context of the home health agency and the patient's unique life circumstances and facilitates patient outcomes. The purpose of this descriptive correlational study is to determine the value of nurse case management in home health care among elderly clients with congestive heart failure (CHF) who are receiving home health services. Value determination may be achieved by examining the relationship between daily hassles; case management organizational structure; social support; and subsequent impact on patient care outcomes, such as quality of life (QOL).

Assumptions/Limitations

This study presumes nurse case management is provided by each agency participating in the study. This study does not attempt to measure case management interventions, or the key processes of case management.

Case management agencies participating in this study are limited to nonproprietary agencies in one southeastern state of the United States. Agency, patient, and nurse case manager participation is based on self-selection, which may introduce a limited degree of bias to the study.

The patient population of interest includes elderly home health clients, ages 65 or older, with a current home health referral diagnosis of CHF. Patients with CHF are

typically high-risk, high-cost, and high-volume consumers of health care resources. Therefore, the selection of the patient population may introduce a degree of bias to the study. CHF patients represent a vulnerable population that is well suited for case management interventions. Case management activities strive to facilitate high quality cost-effective patient outcomes.

Due to the nature of descriptive correlational studies, findings of this study cannot be generalized or applied to any other group of participants or settings. Findings of the study serve to build upon the existing body of knowledge and help to articulate the value of nurse case management in home health care.

Chapter II

REVIEW OF THE LITERATURE

The review of the literature includes a summary of publications relevant to the major concepts contained in the study, including case management, value determination, daily hassles, organizational structure, social support, and quality of life. This study offers an innovative approach to examining the relationships that exist among six important concepts, which have been extensively studied in recent years. However, these six concepts have never been amalgamated into a single study. Since the concepts have not previously been grouped together in research, the review of literature demonstrates a strong emphasis on the conceptualization of each variable. The review of literature is reported in these six distinct segments.

Case Management

The managed care movement and economically driven health care reform initiatives have ushered in the demand for value in patient care services and sparked a renewed interest in case management. Consequently, literature related to case management is readily accessible. An extensive literature review and analysis conducted by Lamb (1995) focused on empirical literature published between the years of 1984 to mid-1994. Several hundred references

were reviewed. Nonempirical anecdotal and narrative descriptions of case management were excluded from Lamb's (1995) review. Therefore, Lamb's (1995) review provides the foundation for the review of literature in this study.

Investigators outside the realm of nursing have conducted numerous studies, which examined the impact of case management on quality and cost outcomes for high-risk populations, including adults with chronic and severe mental illness, older adults with complex health problems, and persons with catastrophic illnesses. Although nursing frameworks, theories, and perspectives were not included in early studies, nurses contributed measurably to research efforts by serving as investigators and case managers (Lamb, 1995).

Current models of case management mirror the practice of public health nursing at the turn of the century. Modern nurse case management models evolved from community health nursing, primary nursing in acute settings, and clinical nurse specialists that co-mingled the two fields (Lamb, 1995).

Nursing literature reflects tremendous confusion about the definition, purpose, scope, and functions of nurse case managers. In the broadest sense, case managers make the health care system work on behalf of patients by influencing the quality of outcomes and cost strategies (Mullahy, 1995). In 1972, to avoid confusion and add clarity to the definition of case management, the National

Case Management Task Force selected the Certification of Insurance Rehabilitation Specialists Commission (CIRSC), as the credentialing agency to develop the case management certification process. The Case Management Society of America (CMSA) (1998) adopted the definition developed by CIRSC, which defines case management as:

A collaborative process which assesses, plans implements, coordinates, monitors and evaluates the option and services to meet an individual's health needs using communication and available resources to promote quality, cost-effective outcomes (CMSA, 1998; Flarey & Blancett, 1996, p. 4; Mullahy, 1995, p. 9).

Earlier attempts failed to develop consensus regarding the definition, roles, and scope of case management and the descant lingers on. Billows (1997) defines case management as "a system that assesses client's needs, develops plans of care, coordinates services and conducts monitoring and quality assurance activities" (p. 527). Lee, Mackenzie, Dudley-Brown, and Chin (1998) provided an excellent review of definitions and practices pertaining to case management. According to Lee et al., case management refers to "a patient care delivery system, a professional practice model, or the groups of activities being performed on patients" (p. 934).

Discord abounds in the research conducted on nurse case management practice as well. Authors describe research on nurse case management as lacking in many basic

scientific methods (Lamb, 1995). During the years of Lamb's review, research on case management typically lacked theoretical underpinnings, operational definitions, control for the effects of extraneous variables, and specificity in nursing-sensitive outcomes. In the quest to document outcomes, investigators studying nurse case management omitted key fundamentals of nursing research. Several common themes, such as coordination, integration, and advocacy emanate from anecdotal reports and qualitative studies. Nevertheless, little attempt was made to examine the theoretical implications among common themes (Lamb).

More recent nursing literature tends to focus on patient outcomes, despite the lack of clearly defined case management nursing interventions. The bulk of nursing case management literature is conducted by nurse administrators and clinicians in acute care settings who have conducted evaluative studies to support newly implemented programs (Lamb, 1995). A sense of urgency is apparent among authors in the quest to document positive outcomes to justify new and existing programs.

A few empirical studies addressed the impact of nurse case management on health service utilization and costs, primarily the use of hospitals and emergency services, and subsequent costs (Lamb, 1995). Limited exploration of other relevant outcomes has occurred, such as nurse and/or patient satisfaction, self-care, or functional capacity. In addition, the effects of case management on health care

costs across the continuum of care is unexplored (Lamb).

Nursing literature from 1995 to the present continues along much of the same vein as described previously by Lamb (1995). Authors continue to search for clear definitions (Lee et al., 1998), purpose (Douglass, 1996), scope and functions of nurse case managers (Lee et al., 1998; Sund & Sveningsson, 1998; Wells, Erickson, & Spinella, 1996).

Most recent literature examines case management structures, which describe how case management is accomplished, and by whom. Increasingly complex health problems and increased responsibility coupled with new challenges to achieve fiscally savvy outcomes demands the use of advanced practice (masters prepared) nurse case managers (Alvarez, 1996; Beecroft, 1997; McCormick-Daly & Mitchell, 1996; Sohl-Kreiger, Wotzka-Lagaard, & Scherrer, 1996; Wells et al., 1996).

Contemporary authors describe alternative models and new settings and directions for case management. McCormick-Daly and Mitchell (1996) described a federally funded nurse managed community health organization for elderly clients. This community-focused model uses masters prepared nurse case managers to provide health promotion, screening, and early intervention to clients enrolled in a Community Nursing Organization (CNO). Reynolds and Smeltzer (1997) described the use of case management in concert with disease management, demand management, reengineering, computerized information systems, and the

development of integrated delivery systems to reduce fragmentation of care. Re-evaluating the value of each component ultimately improves the quality of patient care (Reynolds & Smeltzer).

Anderson-Loftin (1997) described a nursing case management model for rural hospitals. In this model, nurse case managers sought to improve the quality of health care by increasing access to care, reducing costs for high-risk, high-cost, high-volume clients through empowerment of nurse case managers. A kaleidoscope was selected as an analog model to stimulate insight into the creative, unitary nature of rural nurse case management. The kaleidoscope proved to be an effective simile for analyzing the myriad of outcomes that creative case management can achieve (Anderson-Loftin).

In summary, a sizeable amount of confusion, disagreement, and discussions occurs in the literature, regarding the actual definitions, models, and practice patterns for case management. Lee et al. (1998) provided a much needed analysis of current case management concepts, definitions, models, conceptual-operational continuum framework, and case management outcome indicators. Lee et al. addressed the difficulties associated with ambiguity of definitions and concepts, weak research designs, and misguided methodologies employed in case management.

The current study adds to the growing body of knowledge which focuses on patient outcomes in the absence

of clearly defined case management nursing interventions (Lamb, 1995). However, this study goes beyond previous anecdotal reports and includes correlational analysis of the relationship between the structure of nurse case management and specific patient outcomes. Value determinations can be made by examining the strength of the relationships that exist among the variables.

Value Determination

The concept of value determination in nursing literature is another manifestation of the health care reform movement and increased consumerism within the health care industry. While numerous descriptive studies attempt to demonstrate cost-savings and improved outcomes in isolated settings, until recently, no studies sought to investigate the actual value of nursing care specifically, regardless of specialty area.

The American Nurses Association (ANA) is at the helm of determining mechanisms to quantify the value of nursing care and substantiate a strong positive link to patient outcomes (Canavan, 1997). In 1994, the ANA launched the Nursing Safety and Quality Initiative with the intent of documenting the indelible impact nursing has on improved outcomes and decreased costs. The ANA chose six state nurses associations to develop a set of core nursing quality indicators, which would allow the nursing community to monitor the impact of nursing care on patient outcomes and quantify the value of nursing care (Canavan).

Several authors fervently challenged nurses to respond to the current health care environment and growing economic pressures by articulating the value of nursing. Most authors provided anecdotal remedies, which express the need to demonstrate value in the context of management strategies such as Total Quality Management (Gillem, 1988); collaboration (Dunevitz, 1997); shared governance and value analysis (Hardy & Forrer, 1996); and individualism (Gadow, 1995; Katims, 1995).

Allred, Arford, Michel, Dring, Carter, and Scurry-Veitch (1995b) conducted one of the first studies that attempted to quantify the value of case management. Allred et al. expanded the previous study of Allred, Arford, Michel, Scurry-Veitch, Dring, and Carter (1995c) and explored the relationship between practice environment, nursing structure, and subsequent impact on cost effective patient care outcomes. Five patient care outcomes were included and measured by a cost-effectiveness analysis approach described by Wing and Gay (1990). Previous studies of Allred et al. (1995c) and Allred et al. (1995b) culminated in the determination of the relationship between the cost of services delivered, and expected outcomes of care (Arford & Allred, 1995).

The findings of Arford and Allred (1995), Allred et al. (1995b), and Allred et al. (1995c) revealed that the nursing practice environment can have a significant impact on the cost-effectiveness and ultimately the value of nurse

case management. Case management was extremely cost-effective in areas with moderate levels of environmental uncertainty. However, case management was not the most cost-effective approach for coordination and delivery of nursing services for all nursing units that participated in the study. Case management was not at all cost-effective on units with low levels of uncertainty.

The studies of Arford and Allred (1995), Allred et al. (1995b), and Allred et al. (1995c) were confined to a hospital-based case management program delivered in acute care settings. Findings cannot be generalized to home health and/or other community settings.

Bissinger, Allred, Arford, and Bellig (1997) examined the impact of the current economic environment, which emphasizes the promotion of cost-containment strategies, such as organizational redesign, on patient care delivery systems. Bissinger et al. conducted a retrospective study that compared the quality and cost of care provided by neonatal nurse practitioners (NNPs) and medical house staff. Bissinger et al. evaluated the outcomes of two matched groups of infants; one of which received neonatal care provided by NNPs, the other by house staff physicians. The study used organizational theory, which stresses the use of innovative and efficient performance to achieve stability and survival in turbulent and uncertain health care environments. The study was based on a two group, comparative, ex post facto design conducted in a 36-bed

neonatal intensive care unit and included 70 medical records of infants cared for by NNPs and medical house staff. Cost and outcomes were calculated using the method described by Wing and Gay (1990). Findings revealed that neonates cared for by NNPs, in collaboration with neonatologists, received care equal in quality to the matched cases in the physician comparison group, at lower cost, and with greater continuity and consistency (Bissinger et al.).

Irvine, Sidani, and McGillis-Hall (1998) developed the nursing role effectiveness model to evaluate nurses' contribution (value) to health care by evaluating structural variables pertinent to nurses, patient, and organizations. Nurse performance was evaluated through selected nurse-sensitive indicators. Irvine et al. used a conceptual model (Nursing Role Effectiveness Model) to apply a quality improvement model for achieving outcomes, which focused on the relationship between the outcomes and the processes of providing health care. Constant refinement of processes sensitive to outcomes ultimately results in articulated value (Irvine et al.)

Schaffner and Bohomey (1998) provided a tangential example of value determination, in terms of improved outcomes, reduced costs, and improved patient satisfaction in the context of a non-revenue generating center (nutritional support therapy). Cost savings were achieved using a descriptive study and cost avoidance strategies.

No consensus exists in the literature for optimizing value determination of nurse case management. Value, a consumer-based concept, can be determined both subjectively and objectively on many levels (Hardy & Forrer, 1996). Nevertheless, value determination of nursing actions in home health care must be clearly linked to client outcomes (Irvine et al., 1998).

This study is based on Arford and Allred (1995) assertion that managed care demands value. Quality care that is not value-based will not ensure viability in managed care environments. Competition in the healthcare industry will be driven by the documented value of services.

This study attempts to articulate the value of nurse case management by examining the relationship between case management organizational structure and a specific patient outcome (QOL) among elderly home health clients diagnosed with CHF. Case management structures, which result in superior patient outcomes, represent greater value to the patient and the home care agency.

Daily Hassles

The idea of daily hassles evolved from the early works of Holmes and Rahe (1967). Holmes and Rahe attempted to measure the impact of stressful life-events on health outcomes. Examples of stressful life events include, but are not limited to: marriage, change in responsibilities at work, personal injury or illness, retirement from work,

Christmas, having to pay a mortgage, major change in sleeping habits, outstanding personal achievement, or death of a spouse (Holmes & Rahe).

Holmes and Rahe (1967) concluded that the more stressful life changes an individual experienced recently, the more likely the person would become ill, as a result of the extensive coping effort required. The instrument developed by Holmes and Rahe was modified over the years, however, the theoretical foundation or basic contentions of the tool remained constant. The authors maintained that the higher the composite stress score, the greater the stressful demands were said to be on the adaptational resources of the individual, and the greater the potential for subsequent illness.

Lazarus (1998b) found the theoretical framework of Holmes and Rahe's (1967) life-change method to be inadequate and impractical. Lazarus, an accomplished psychological investigator, identified the need for a different approach to stress measurement (Lazarus, 1998a).

According to Lazarus (1998b), most stressful demands in daily life are chronic or recurrent. Major changes, such as divorce, change in residence, or death of a loved one, are typically infrequent events. Stress is, nevertheless, a major part of human daily existence (Lazarus). Lazarus maintained that the daily grind of seemingly minor irritations, frustrations, and threats, such as problems interacting with family members, troubles at school, and

difficulties on the job, were just as important in arousing stress as major life events, perhaps even more important.

In concert with a group of researchers, Lazarus (1998a; 1998b) conceptualized, constructed, and initiated the *Berkeley Stress and Coping Project*. As a result, Lazarus and colleagues developed a list of daily *hassles* and *uplifts* (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982; DeLongis, Folkman, & Lazarus, 1988; Kanner, Coyne, Schaefer, & Lazarus, 1981).

Members of the *Berkeley Stress and Coping Project* created the initial daily hassles scale for a field study which began in 1977 (Lazarus, 1998a). The initial list of daily hassles included 117 items, which were grouped into eight major categories: household responsibilities, finances, work, environment and social issues, home, health maintenance, personal life, and friends (Lazarus, 1998b).

Through continued work in the *Berkeley Stress and Coping Project*, Lazarus (1998b) and associate researchers realized that people not only experience many hassles in daily life, but also encounter positive experiences. Lazarus and associates began to explore other hypotheses. Lazarus posed the question: do people who experience a significant number of hassles, but also experience a number of positive experiences, have better individual health and well-being than people who experience a significant number of hassles, but have fewer positive experiences? A list of daily uplifts, which contained 135 items such as, getting

sufficient restful sleep, making a new friend, or getting good advice emerged from alternate hypotheses during the *Berkeley Stress and Coping Project* (Lazarus).

During early studies (Kanner, et al., 1981; DeLongis et al., 1982, 1988), Lazarus and associates compared stressful life events (Holmes & Rahe, 1967) to daily hassles as a predictor of emotional distress and psychological symptoms in a study of 100 middle-aged men and women using interview techniques once a month over the course of one year. Findings concluded that daily hassles scores were more strongly related to emotional distress and symptoms of dysfunction than stressful life events (Lazarus, 1998b). Lazarus developed a threefold explanation for the findings.

First, high-scoring major life events are relatively infrequent, but daily hassles are not. Individuals may experience numerous severe daily hassles, but may not experience any significant major life events. Therefore, most of the stresses experienced by average individuals are comprised of a plethora of seemingly minor daily hassles, and not in the form of major life events (Lazarus, 1998b).

Second, major life events also impact the pattern of daily hassles in a person's life. Although life events and daily hassles are positively correlated, daily hassles represent the ultimate impetus for emotional distress and dysfunction (Lazarus, 1998b). The death of a loved one may result in profound grief, which may increase a person's stress appreciably, nevertheless, losing the keys to the

car on the way to the funeral is an event that may push an individual over the proverbial edge.

Third, and most important conceptually, daily hassles are considered proximal events in a person's life, and major stressful life events are considered distal events (Lazarus, 1998b). Proximal events infer that the person has already identified the experience as vexatious, based on the events personal significance. Identification of an event as a hassle implies a significant level of stress.

Life events, conversely, are distal because the events do not affect every individual in the same way (Lazarus, 1998b). For example, the death of a loved one may be viewed as a tragic colossal loss for one person, and a release from overwhelming obligations for another. The same principle applies to divorce. For one person, divorce may signify the end to an abusive tumultuous relationship, but for another divorce represents a personal failure and an extremely painful process (Lazarus, 1998b).

Over the years, the hassles and uplifts questionnaires were refined and included scoring for both frequency and intensity, as rated by subjects (Lazarus, 1998b). Studies clearly revealed that daily hassles are not equal in terms of the capacity to damage health and morale. Some hassles are more central than others to a person's ability to cope effectively. The centrality of hassles differs from one individual to another (Gruen, Folkman, & Lazarus, 1989).

According to Lazarus (1998a) understanding the dynamics

of stress, coping, and adaptation serve as valuable sources of information about an individual's psychological characteristics. Insights into a person's psychological constitution such as, vulnerability to stress, coping strengths and weaknesses, and the propensity for successful adaptation, are useful predictors of health, well being, and quality of life.

This study examines the home health care client in the context of each client's unique life circumstances, which includes frustrations with caregivers and or family members; concerns about having enough money for food, housing, and health care; worries about changes in health and physical abilities; apprehension concerning pets, yard care, and home repairs; and a myriad of other inescapable calamities known as daily hassles. Examination of the relationship between daily hassles and patient outcomes such as quality of life in the context of case management is central to the purpose of this study.

Organizational Structure

Understanding the significance of organizational structure begins with understanding organization theory. Organizations are social units that come together for a particular purpose (Daft, 1998; Galbraith, 1977; Rakich, Longest, & Darr, 1992; Shafritz & Ott, 1996). Organization theory consists of a set of propositions that explain how groups and individuals behave in varying organizational structures and situations (Shafritz & Ott).

Organizational theory has been an integral part of human existence since primeval attempts to organize groups for hunting, war, and survival in families (Shafritz & Ott, 1996). Galbraith (1977) believes that organizations accomplish work through division of labor. Galbraith further contends that information-based decision processes drive organizations continuously over time. Daft (1998) suggests that organizations are deliberately structured and coordinated activity systems, which are linked to the external environment.

Some of the earliest accounts of organizational structure appear in the Bible. In 1491 BC, during the exodus from Egypt, Jethro, the father-in-law of Moses, urged Moses to delegate authority over the tribes of Israel along hierarchical lines (Shafritz & Ott, 1996). According to the book of Exodus (18:21-18:23), Jethro implored Moses:

You should also look among all the people for able and God-fearing men, trustworthy men who hate dishonest gain, and set them as officers over groups of thousands, of hundreds, of fifties, and of tens. Let these men render decisions for the people in all ordinary cases. More important cases they should refer to you, but all the lesser cases they can settle themselves. Thus, your burden will be lightened, since they will bear it with you (New American Bible, 1970, p. 61).

Sun Tzu's *The Art of War* clearly articulates the need

for hierarchical organization, interorganization communications, and staff planning to ensure successful engagements in battle (Shafritz & Ott, 1996). Some of the most exquisite discussion about organization structure and design come from studying the early armies. Prince Maurice of Holland (1567-1625) was a recognized master of organizational design (Mastenbroek, 1996). Maurice introduced several innovative organizational principles into the battlefield. According to Mastenbroek, Maurice was faced with a riotous poorly disciplined group of soldiers, who were pitted against an overwhelming force of Spanish troops in the Netherlands. Maurice implemented the following actions:

- The common formation in the sixteenth century referred to, as the Spanish Brigade was comprised of a square formation of 50 men across and 50 men deep. The square formation was completely filled with unskilled troops, with the sole purpose of providing moral and physical back up for the front ranks, by pushing forward.
- Maurice dramatically increased the performance of the troops by introducing a shallow formation. Changing the battle array required a major shift in psychological composure of the troops. The previous moral support provided by the mass of men was lost and vulnerability increased, which required better training and increased discipline. Improved

discipline and training markedly improved the soldier's personal effort and self-confidence.

- In addition, short, clear standardized commands were introduced. Issuing commands required silence and a well-coordinated approach to battle. Standardized commands also afforded Maurice flexibility to redirect large groups of men at a moment's notice.

Maurice emerged victorious and by 1630, most European states had adopted Maurice's innovative battlefield tactics (Mastenbroek, 1996).

History reveals innumerable examples of the growth and development of organizational concepts and theories. However, organizational theory lay dormant over the centuries until society at large discovered practical uses for the theories (Shafritz & Ott, 1996).

Modern growth and development of organizational design and structure was ushered in during the industrial revolution under the leadership of three important theorists. Fayol, a French industrialist; Weber, a German sociologist; and Taylor, an American mechanical engineer, developed the classical concepts of organizational design (Rakich et al., 1992; Robbins, 1990).

Fayol (1996) identified 14 legendary principles of management that were originally published in 1916. The principles set forth by Fayol have stood the test of time and continue to be important concepts in organizations. Fayol's principles of management include such concepts as:

division of work, authority and responsibility, discipline, unity of command, unity of direction, service before self, remuneration, centralization, scalar chains, order, equity, stability of tenure of personnel, initiative, and esprit de Corps (Fayol; Rakich et al., 1992, Robbins, 1990).

Weber (1996) coined the term "bureaucracy" in 1922. Weber believed that bureaucracy in the purest form represented an ideal and completely rational form of organization. To Weber, organizations work optimally in situations that provide for "fixed and official jurisdictional areas, which are generally ordered by rules, that is, laws or administrative regulations" (p. 80). An ideal bureaucracy consists of:

- A clear division of labor
 - Positions arranged in a hierarchy
 - Formal rules and regulations
 - Impersonal relationships
 - Employment based entirely on technical competence
- (Rakich et al., 1992).

Taylor applied scientific methods to activities on a machine-shop floor. Taylor sought to determine the "one best way" to accomplish required work tasks. Taylor (1996) developed four principles of scientific management, which were originally published in 1916. Taylor's principles of scientific management include:

- The scientific determination of each aspect of a worker's job (through time and motion studies)

- The scientific selection and progressive development of all workmen
- An amalgamation of management and labor forces to accomplish work tasks based on scientific methods
- An equitable division of labor between managers and workers; where managers provide planning and supervision, and workers perform the required tasks

Although Fayol's (1996) and Taylor's (1996) work occurred at the same time during the early 1900s, Taylor was published in the United States and was more widely used initially. Fayol's works were not translated into English until the 1930's (J. Alexander, personal communication, December 1998). In addition, the foci of Fayol and Taylor's work varied considerably. Fayol's work was based upon years of experience as a practicing executive, whereas Taylor's ideas were based upon scientific methods and research (Robbins, 1990).

Mintzberg (1983) suggests the design of organizations begins with individual positions. Individuals form the building blocks for work groups, cluster of work groups, organizations, and integrated systems of organizations.

The works and writings of Fayol, Weber, Taylor, and other classic theorists provided the foundation for contemporary organizational structure and designs (Daft, 1998). The principles presented by the classic theorists have permeated the culture and philosophy of many advancing sciences and disciplines since the early 1900s. A rich

collection of work on organizational structure and design is readily available in business and management literature.

Emerging disciplines such as nursing (Bishop, 1994) have adopted many of the fundamental principles developed by the early theorists. However, nursing literature which examines the classic concepts of organization structure and design is noticeably absent until the 1990s.

Review of business, management, and nursing literature reveals no clear agreement regarding what actually makes up the term organizational structure. Theorists do not agree on operational definitions or whether dimensions exist as primary or subsets of larger dimensions (Robbins, 1990).

Rakich et al. (1992) believe organizational structure refers to formally designed arrangements such as authority, grouping of work activities into departments, coordination, communication, information, and control mechanisms. Daft (1998) suggests organization structure is depicted in the organization chart, which provides a visual representation of a myriad of underlying activities and processes in an organization.

Alexander (1996) described structure as "the allocation of work roles and administrative mechanisms to control work activities" (p. 43). Closs and Tierney (1993) refer to Donabedian's definition of structure, which describes the resources used in the provision of care and the more stable arrangements under which care is produced.

Robbins (1990) identified three core dimensions of

organizational structure, which include complexity, formalization, and centralization. Complexity refers to "the degree of differentiation that exists within an organization" (p. 83). Robbins describes differentiation as either horizontal (the degree of horizontal separation between units), vertical (the depth of the organizational hierarchy), or spatial (the degree to which the location of an organizations facilities and personnel are distributed geographically).

Formalization refers to "the degree to which jobs within the organization are standardized" (p. 93). A high degree of formalization is characterized by explicit job descriptions, numerous organizational rules, and well-defined policies and procedures, which prescribe work processes (Robbins, 1990). High formalization results in consistent and uniform work output. Low formalization is characterized by non-programmed behavior. In work settings with low formalization, employees enjoy increased freedom and autonomy and exercise a great deal of discretion in work processes. Typically, formalization refers to an organization's written policies, procedures, and regulations (Daft, 1998; Robbins, 1990).

Robbins (1990) defines centralization as "the degree to which decision making is concentrated at a single point in the organization" (p. 104). High concentration leads to high centralization, and low concentration leads to low centralization (decentralization). Centralization also

involves the dispersion of authority for decision making within the organization. Specifically, centralization is:

The degree to which the formal authority to make discretionary choices is concentrated in an individual, unit, or level (usually high in the organization), thus permitting employees (usually low in the organization) minimum input into their work (p. 106).

Daft (1998) described key components of organizational structure, which include:

- Formal reporting relationships, including the number of levels in the hierarchy and the span of control of managers and supervisors
- Identification and grouping of individuals into departments, which comprise the total organization
- Design of systems to ensure effective communication, coordination, and integration of effort across departments

Alexander (1996) conducted a study to address the role of technology and structure on nursing organizational designs. Alexander tested the appropriateness of the organizational design on six different nursing units by evaluating the fit between technological and structural dimensions as predictors of quality nursing care (Alexander). According to Alexander, organizational structure is either informal or bureaucratic based on three dimensions: vertical participation, horizontal participation, and formalization. Vertical participation

is "the degree to which supervisors and subordinates consult together concerning job-related tasks and decisions" (p. 44). Horizontal participation is "the degree to which individuals are involved with peers in decision making and in defining tasks" (p. 44). Formalization is " the extent to which rules, procedures, and instruction exist and are used" (p. 44).

Alexander (1996) found:

- A negative relationship between technological instability and structural dimensions (optimal outcomes occur on nursing units with few emergencies and when nurses use very few nursing procedures).
- A positive relationship between technological variability and structural horizontal participation (on highly diverse nursing units, optimal outcomes occur when staff have a positive attitude toward collaborative problem solving).
- A positive relationship between technological uncertainty and structural formalization (optimal outcomes occur when nurses are faced with complex decision making processes, and when numerous procedures and protocols are in place to facilitate decision-making).

The early works of Alexander and Randolph (1985); Alexander and Bauerschmidt (1987); and Alexander, Thomas, and Cumbey (1993) represent some of the earliest attempts by nursing researchers to examine the impact of nursing

organizational structure on the performance and outcomes of nursing care.

The advent of managed care has created new demands on nursing that require investigation. For example, nursing research related to cost-containment methods, such as case management, in relation to patient outcomes, is gaining academic momentum. Prior to 1994, a significant knowledge gap related to nurse case management models, structures, and subsequent patient outcomes existed. Relationships between case management structure, process, and outcome were virtually unexplored (Lamb, 1995).

Allred et al. (1995c) were among the first researchers to explore the relationship between case management structural dimensions and the nursing practice environment. Allred et al. (1995c) constructed a framework based on contingency theory and organizational theory, in which structural dimensions of the case management model were explored in a 517-bed acute care setting, which involved 113 nurses and case managers from 26 different nursing units. Findings revealed that, excluding participation in decision-making, the model's targeted structural dimensions of differentiation, task coordination, and decentralization did not change in response to the perceived demands of the practice environment. Although no generalization can occur as a result of the study, important early findings about the impact of nursing practice environment on structural dimensions of case management were discussed.

Although nursing literature has made great strides to advance the quantity and quality of research related to the impact of nursing structure on patient outcomes, additional research is still required. This study attempts to expand on the body of knowledge related to the evaluation of nurse case management organizational structure and subsequent impacts on patient outcomes.

Previous studies of Alexander (1996) serve as the foundation for evaluating the structural dimensions of nurse case management in this study. Specifically, the current study attempts to examine the structural dimensions described by Alexander, in the home health setting and among nurse case managers. By analyzing the relationship between the three structural dimensions and subsequent patient outcomes, value determinations can be made regarding the effectiveness of nurse case management among elderly clients with CHF who receive home health services.

Social Support

The idea of social support is frequently discussed in the literature and permeates all facets of daily living. Social support is a lot like chicken soup. Social support is a powerful remedy for all sorts of ailments, even though empirical data related to the healing and restorative properties remains elusive. Like chicken soup, knowledge of the curative and revitalizing nature of social support is widespread and primarily based on anecdotal folk wisdom (Berkman, 1984).

Social support begins and ends within the context of the family unit. Cobb (1976) provided a classic look at social support. According to Cobb, social support begins in utero and is communicated in a myriad of ways between the mother and baby. However, social support is most clearly communicated in the way a mother holds, embraces, cuddles, and caresses (supports) her infant. As life progresses, support is derived from other members of the family, then from peers at school, co-workers, and in community groups and situations. Towards the end of life, social support is once again derived primarily from family members (Cobb).

Family members provide 80% to 90% of all the care provided to non-institutionalized elderly people who need assistance in the United States (Choi & Wodarski, 1996). The role of the spouse in providing social support is taken for granted (Choi & Wodarski; Ducharme, 1994). Many elderly people in need of assistance reside with adult children. Most elderly parents, who do not live with adult children, live near at least one adult child that maintains frequent contact and provides periodic assistance (Choi & Wodarski; Heltsley & Powers, 1975).

A positive relationship between social support and health is widely described and accepted in medical, nursing and allied health literature, especially when social support pertains to frail and elderly populations (Berkman, 1984; Choi & Wodarski, 1996; Cohen, 1988; Langford,

Bowsher, Maloney, & Lillis, 1997; Mutran, Danis, Bratton, Sudha, & Hanson, 1997; Webb, Delaney, & Young, 1989).

Several distinctly different definitions for social support have been proposed. Cobb (1976) claims social support is defined as "information leading the subject to believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations" (p. 300). Buschmann and Hollinger (1994) offered another perspective on the definition of social support by defining social support as interpersonal transactions, which involve one or more of the following behaviors (Buschmann and Hollinger, p. 15):

- Expression of positive affect between individuals
- Affirmation or endorsement of another person's behaviors
- Providing direct aid or assistance to another

Social support has broadly been defined in the literature as the provision of assistance and protection to others, especially to individuals (Langford et al., 1997). Social support has been viewed as a reciprocal process (House, 1981), which involves an exchange of resources between at least two people (Shumaker & Bronwell, 1984). Cobb's (1976) definition is considered a classic definition and is widely accepted in the literature (Tilden, 1985).

Aging often results in a loss of health and a loss of important social contacts (Mutran et al., 1997). Research related to social support among elderly populations is

appropriate because elders generally have more health problems, fewer resources, and a greater need for supportive relationships than persons in younger age groups (Langford et al., 1997).

Some studies have demonstrated that lack of social support is associated with increased mortality, deteriorating health, and an increased likelihood of hospitalization (Choi & Wodarski, 1996). Cobb (1976) indicated that social support could protect people in crisis from a number of pathological states including:

- Low birth weight
- Death
- Arthritis
- Tuberculosis
- Depression
- Alcoholism
- Social breakdown syndrome

In addition, social support may decrease the amount of medication required, accelerate recovery, and facilitate compliance with various treatment regimens (Cobb).

Langford et al. (1997) conducted a conceptual analysis of social support using the methodologies recommended by Walker and Avant (1995). Langford et al. reviewed 85 published articles, which focused on varying aspects of social support. Langford et al. sought to identify the most frequently used theoretical and operational definitions of social support. Langford et al. concluded

that the four most frequently cited defining attributes of social support include emotional, instrumental, informational, and appraisal. Principle antecedents of social support included social network, social embeddedness, and social climate. Consequences of social support were subsumed under the general rubric of positive health states (Langford et al.).

The importance of social exchange is evident in most definitions of social support (Berkman, 1984; Langford et al., 1997; Mutran et al., 1997). Social exchange theory explains human behavior as an exchange of mutually rewarding interactions in which the receiving of rewards is based on reciprocation of favors (Langford et al.). Some authors have identified a positive relationship between life satisfaction and the giving and receiving of social support (Langford et al.; Webb et al., 1989).

Demographic factors, such as age, can lead to an increase or decrease in elders' frequency of social interactions. Social interactions can have a positive influence on health and life satisfaction especially among elderly populations (Webb et al., 1989). The elderly as a group, are not viewed favorably by younger (college age) people (Levin & Levin, 1981). Elders experience affiliative isolation in many circumstances. Elders are forced to take the initiative in establishing relationships. Numerous studies have clearly demonstrated an aversion to interacting with elderly persons, especially

the poor elderly (Levin & Levin; Webb et al.). As a result, options for meaningful interaction become increasingly more limited and important with advancing age (Heltsley & Powers, 1975).

Webb et al. (1989) conducted a review of over 40 research reports, which focused on attraction and aging. Studies conducted in the 1960s and 1970s tended to concentrate on other age group's perception of elderly people, while studies conducted in the late 1980s focussed on the elders' perceptions of members of other age cohorts (Webb et al., 1989).

According to Webb et al.'s (1989) review of the literature, in relationships that were important to personal life satisfaction, elders overwhelmingly preferred to associate with middle-aged or older persons, rather than young people. Elders identified more closely to the issues and priorities of middle-aged individuals (Webb et al.).

Heltsley and Powers (1975) conducted a series of interviews with 163 subjects aged 60 years and older in rural Iowa towns with populations between 1,000 to 2,500. Heltsley and Powers sought to identify the differences in factors related to the reported frequency of social contact by the aged and the perceived adequacy of interactions among the elderly. Heltsley and Powers concluded that elderly people tend to seek social interaction on two distinct levels. One level satisfies and ensures the necessities such as basic safety and well-being, while

another level seeks to satisfy a need for more intense high-quality interactions to compensate for alternatives and life experiences no longer available to elders (Heltsley & Powers, 1975). Satisfaction with social support has been found to be an accurate predictor of depression among the elderly (Buschmann & Hollinger, 1994).

Mutran et al. (1997) identified the importance of the existence of contact with family members and friends in predicting psychological and physical health outcomes. The frequency of contact is also a positive indicator of psychological and physical well-being (Mutran et al.). Contact with family members is an important predictor of death and/or institutionalization among the elderly (Mutran et al.).

Social support, an essential component for human existence and strong predictor of health and well-being, is less available for elders than for younger persons (Choi & Wodarski, 1996; Mutran et al., 1997). Older people are much more likely to live alone and typically report fewer contacts with friends and report less satisfaction with current levels of social support (Mutran et al.). The older elderly are particularly likely to suffer psychological distress due to the loss or withdrawal of social support (Mutran et al.).

In summation, ensuring quality of life for the elderly is a major challenge facing policymakers and health care providers. Therefore, gaining a better understanding of

the factors associated with positive health outcomes, psychological health, and well-being of the elderly is a growing concern for researchers (Ducharme, 1994).

This study attempts to build on the foundation of previous research by examining the relationship between patient daily hassles, social support, and patient outcomes within the context of nurse case management among elderly clients with CHF, who are receiving home health services. This study embraces Cobb's (1976) definition and perspective of social support. Social support clearly begins and ends within the inextricable context of a dynamic family system. Social support is like chicken soup; the healing and restorative powers are mystical. The strong association between social support and positive health outcomes is poorly understood, yet widely accepted.

Social support is an important and pervasive phenomenon among frail and vulnerable elderly populations. The trust, love, mutual respect, and caring that are requisite to social support form the basis of human existence and provide frail elderly clients with a reason and impetus to meet each day with renewed hope and purpose. This study examines the relationship between social support and an important patient outcome, quality of life, among chronically ill and elderly home health clients with CHF.

Quality of Life

One of the most fundamental objectives of all health care providers is to facilitate patient health behaviors

and responses, and to positively effect each patient's unique quality of life (Strickland, 1998; Ware, 1993). Likewise, the goal of most patients is to achieve a more effective life and to preserve and optimize the current level of functioning and well-being (Ware). Quality of life is therefore, an appropriate concept to use when evaluating patient care outcomes (Strickland).

To understand how this concept evolved into such a prominent and overarching theme in health care and in every facet of modern American society requires a review of the origin of quality of life. The term 'quality of life' dates back to 1964 (Ferrans & Powers, 1985; McCall, 1975; Meeberg, 1993; Packa, 1989). Lyndon B. Johnson, during a speech at Madison Square Garden coined the term on October 31, 1964 (Packa). Johnson used the term quality of life to convey the view that many more issues are involved with having a good life than merely being financially secure. Johnson wished to communicate that money cannot secure all things, particularly one's 'quality of life' (Packa).

Karnofsky, Abelmann, Craver, and Burchenal (1948) were among the first researchers to explore the concept that is currently referred to as quality of life. Karnofsky et al. conducted a study on the effects of nitrogen mustards on primary lung carcinoma. One of the outcomes measured by Karnofsky et al. was subjective improvement in the patient's condition, which was indicated by the patient's self-reported sense of well-being (Karnofsky et al.).

Description and use of the term quality of life has rapidly expanded in medical and nursing literature since Lyndon B. Johnson fashioned the new catch phrase in 1964. Despite the overwhelming public acceptance, widespread use in the literature, and broad identification with the concept, no universally agreed upon definition exists. Also, no generally accepted standards for measuring or evaluating an individual's quality of life have been developed (Ferrans, 1990a, 1990b; Ferrans & Powers, 1985; Gerson, 1976; Marshall, 1990; McCall, 1975; Meeberg, 1993; Moberg & Brusek, 1978; Molassiotis, 1997; Packa, 1989; Papadantonaki, Stotts, & Paul, 1994; Strickland, 1998).

The difficulty in defining quality of life stems from the notion that different people value different things (Ferrans, 1990a, 1996; Ferrans & Powers, 1985; Molassiotis, 1997). Each individual brings a highly personal and unique perspective to the determination of quality of life. Each individual is therefore, the only proper judge of personal quality of life (Ferrans, 1990a, 1990b, 1996; Molassiotis; Raphael, Brown, Renwick, Cava, Weir, & Heathcote, 1995; Ware, 1993).

Although the patient has been identified as the best source for information related to quality of life, information about patients' experiences with disease and treatment regimes and the impact on patient quality of life has not been routinely collected during clinical research, medical, or nursing practice (Ware, 1993). However, the

last decade in health care and the ongoing evolution of managed care, has ushered in a new recognition of the centrality of the patient's point of view in monitoring the quality of patient outcomes (Ware).

Quality of life is a highly complex multidimensional construct that covers all areas of a person's life. Quality of life encompasses a wide range of physical and psychological characteristics and limitations that describe an individual's ability to function and to derive satisfaction from life experiences (Ferrans, 1990a, 1990b; Foreman & Kleinpell, 1990; Grant, Padilla, Ferrell, & Rhiner, 1990; Jallowiec, 1990; Moberg & Brusek, 1978; Molassiotis, 1997; Tarter, Siegfried, Biller, Switala, & Van Thiel, 1988).

Researchers, when measuring quality of life, describe several different domains. Jallowiec (1990) conducted a thorough review of the literature, which identified three primary components effecting quality of life: health, functional ability, and life satisfaction. Ferrans (1990a) suggested that the global construct for quality of life is comprised of four major domains: health and functioning, socioeconomic, psychological and spiritual, and family. Raphael et al. (1995) indicated that quality of life is comprised of three domains: being, belonging, and becoming. Other researchers believe quality of life should be broadly conceived including psychological, physical, spiritual, social, and environmental domains (Raphael et al.).

Although an abundance of literature describing key attributes and contributing factors of quality of life exists, researchers offer no clear consensus regarding the essential elements of quality of life. However, Jalowiec (1990) provided a superb summary of specific components that help to determine an individual's quality of life in Table 1 (p. 272). To facilitate graphic display, Jalowiec divided the components into three key dimensions of quality of life, which include physical, psychological, and social aspects.

Table 1.

Dimensions of Quality of Life from Jalowiec, 1990, p.272

Physical	Psychological	Social
Physical Functioning	Level of Stress	Ability to Communicate
Ambulating and mobility	Coping Ability	Role Functioning
Self-care ability	Life Satisfaction	Social Support resources
Exercise Tolerance	Control over life	Usefulness to others
Ability to work	Meaningfulness of life	Recreational participation
Energy/stamina	Healthy body image	Social Interaction
Adequate sleep/rest	Self-acceptance	Satisfaction with sexual life
Nutritional balance	Self-esteem/self-worth	Marital/family relationships
Absence of pain	Absence of negative moods	Family health/happiness
Control of symptoms	Psychological well-being	Financial independence
Somatic comfort	Achievement of life goals	Socioeconomic status
Physical independence	Intellectual functioning	Standard of living
Required lifestyle changes	Perceived health status	
	Seriousness of illness	
	Illness worries/concerns	
	Confidence in treatment	
	Acceptability of treatment	
	Satisfaction with treatment	
	Satisfaction with health care	
	Adjustment to illness	

Attempts to define, qualify, and measure a concept such as quality of life is fraught with the possibility of ideological bias and/or distortion (Gerson, 1976). Nevertheless, quality of life, as a measure of the degree

to which a person finds that life is worth living, is an appropriate outcome measure for nursing (Goodinson & Singleton, 1989; Grant et al., 1990; Strickland, 1998; Varricchio, 1990).

A considerable amount of controversy is found in the literature regarding the best methods and instruments to use when measuring quality of life. Many clinicians believe that assessment of quality of life requires a multifaceted approach to obtain an accurate and complete evaluation of the impact of illness, treatment, or interventions on the patient's quality of life (Jalowiec, 1990). Others recommend using instruments that target a single measure of quality of life (Grant et al., 1990). Aaronson (1988) advocates measuring only the components of quality of life that can be reasonably assumed to be effected by patient illness, treatment regimen, or health care interventions.

The use of standardized surveys to evaluate patient functional status and well-being can be traced back over 300 years (Ware, 1993). A detailed review of the earliest attempts to measure patient well-being issues exceeds the scope of this study. However, the greatest amount of interest and most rapid growth in refinement of methods to measure patient well-being, has occurred during the last 50 years. During the past 50 years, many health scales have been constructed and used successfully (Ware). For the purposes of the current study, patient well-being is

considered the conceptual precursor to quality of life.

Significant refinement of health status surveys, which examined client's sense of well-being, took place during the *Health Insurance Experiment* (HIE), sponsored by the Rand Corporation (Ware, 1993). The goal of the HIE was to construct the best possible scales for measuring a wide array of functional status and well-being concepts for non-aged adults and children (Ware). The HIE clearly demonstrated the potential of scales constructed from self-administered questionnaires as reliable and valid tools for evaluating changes in health status among the general population (Ware). However, the HIE left two key questions unanswered (Ware, p. 2:3):

- Can methods of data collection and scale construction such as those used in the HIE work in sicker and older populations?
- Can more effective scales be constructed?

The Medical Outcomes Study (MOS), under the direction of Ware (1993) sought to answer the questions raised by the HIE. The MOS surveys, like the HIE questionnaires, were based on a multidimensional model of health. The original MOS surveys were more comprehensive and examined 40 physical and mental health concepts (Ware).

The Short Form 36-item survey (SF-36™) evolved out of the earlier HIE and a series of MOS surveys. However, the MOS population studied during the development and refinement of the SF-36™ was considerably older and more

ill than the HIE population. Half of the clients in the MOS longitudinal panel were 60 years or older, about 40% were eligible for Medicare, and all of the clients had one or more chronic conditions. The SF-36™ survey was constructed to represent eight of the most important health concepts included in the MOS and other widely used health status surveys (Ware, 1993).

The SF-36™ assessed health concepts that represent basic human values, which were considered relevant to every person's functional status and well-being (Ware, 1987). The SF-36™ is described as a generic measure because the concepts assessed were universally valued and not age, disease, or treatment specific. The generic health measures in the SF-36™, were designed to assess health-related quality of life outcomes known to be most directly effected by disease and treatment (Ware, 1993).

Prior to the SF-36™, no instrument was available on the market or supported in the literature, which captured a comprehensive array of generic functional status and well-being measures. No health status instrument had received widespread acceptance or demonstrated suitability for use across diverse populations and health care settings (Ware, 1993). With the exception of the Sickness Impact Profile (SIP), which was developed by Bergner, Bobbitt, Pollard, Martin, and Gilson (1976), little opportunity has occurred to examine differences in functioning and well-being for both the sick and well populations. The SF-36™ expands on

the work of Bergner et al. and provides a common mechanism for comparing patients with chronic health problems and people sampled from the general population (Ware).

The content items used in the SF-36™ include items frequently described in the literature. Many of the selected items have foundations in instruments that have been widely used for more than 20 years (Ware, 1993). Ware and colleagues have studied the content of various source instruments for measuring limitations in physical; social and role functioning; general mental health; and general health perceptions. The accumulation of experience with other established full-length scales greatly facilitated the construct of the SF-36™ (Ware).

In summary, the current health care environment and the advent of IPS in home care, has greatly increased the need for information related to patient outcomes such as, the client's perceived quality of life. Contemporary health care organizations demand more than cost-effective care. Health care organizations demand value in terms of best available service delivery (Arford & Allred, 1995).

To remain viable, home health agencies must clearly demonstrate quality outcomes for patients. As managed care organizations continue to expand and penetrate Medicare markets (NAHC, 1997), managed care policy analysts will use patient outcomes, such as quality of life, to compare the costs and benefits of competing ways of organizing and financing health care services (Ware, 1993). Astute home

health administrators and managers must utilize patient outcome information to ensure the best possible staff and/or client mix for vulnerable patient populations. By maintaining a high degree of vigilance and ongoing assessment of patient outcomes, such as quality of life, nurse managers can clearly articulate the value of case management in home health.

Summary of Review of Literature

Nurse case management researchers face critical challenges as clinicians, administrators, and health care policy makers demand data and information to support the use of case management as a central figure in a restructured integrated health care delivery system. The body of knowledge surrounding case management has grown exponentially during the last 30 years, however the need for clear, consistent, and credible findings, especially in the areas of value determination and evaluation of nursing organizational structure, persists. In contrast to many areas of nursing, the results of studies germane to nurse case management are, and will continue to be, explicitly linked to health care policy decisions and opportunities for advanced practice nurses and reimbursement. Case management offers nurse researchers a unique opportunity to develop new and innovative models of inquiry in response to increasing demands to demonstrate information that succinctly and immutably articulates the value of nurse case management (Lamb, 1995).

A knowledge gap exists related to examination of patient unique life situations as experienced through daily hassles, social support, case management organizational structure, and quality of life, which ultimately determine value in the area of home health case management. This study attempts to bridge the gap and articulate the value of case management among elderly clients with CHF who are receiving home health services.

Chapter III

THEORETICAL FRAMEWORK

The central unit of analysis in this study is the patient within the context of an open system. Neuman's (1995) Systems Model provides the theoretical foundation for this study. General Systems Theory is a theory of organized complexity, where all components are in constant interaction. Open systems are characterized by a continuous flow of input and process, output and feedback. A system suggests dynamic energy exchange and movement toward or away from stability, which has a direct relationship to outcome predictability (Neuman). Systems are never at rest. Instead, systems move cyclically toward differentiation and strive for further growth and survival of the organism (Neuman). The environment is critical because the environment directly impacts the life span of a system. The environment consists of all factors that can effect or are effected by the system (Neuman). Neuman's Systems Model in Figure 1 provides a classic illustration of the concept of open systems and interactions with the environment. The idea of constant dynamic interaction and adaptation to stressors is central in Neuman's model.

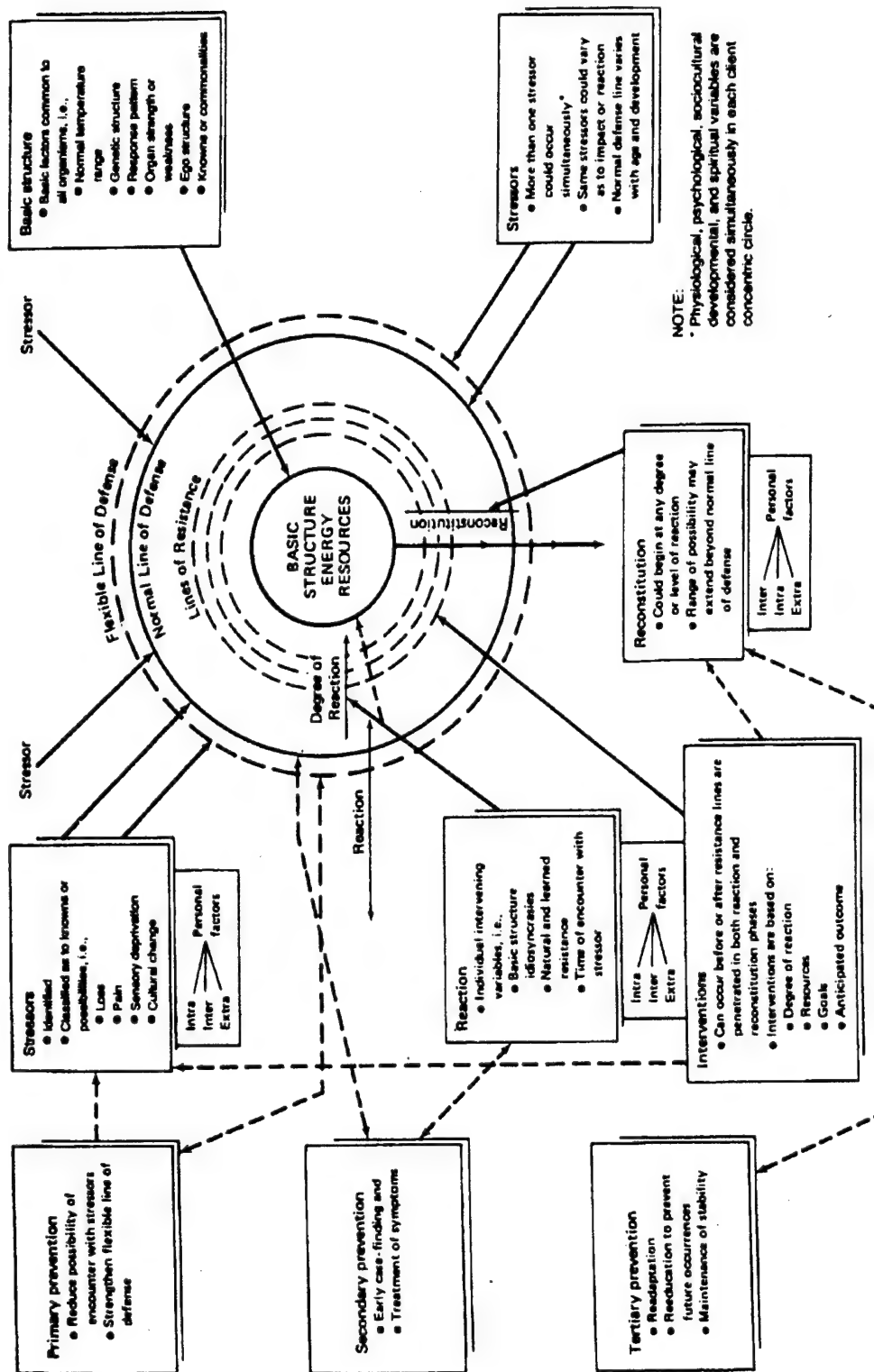


Figure 1. Neuman's Systems Model
(Neuman, 1995, p. 17)

The role of nurse case management and home health services are clearly discernable in Neuman's Systems Model. According to Neuman (1995), the client's point of entry into the health care system can occur at any of three levels of prevention:

- primary (before a reaction to a stressor occurs)
- secondary (after a stressor reaction has occurred)
- tertiary (following treatment of a stressor reaction)

An example of primary prevention and intervention for an elderly client with CHF might include a home health case manager's recommendation for energy conservation measures, such as taking frequent breaks between activities, and avoidance of activities known to result in fatigue or shortness of breath. From a systems perspective, primary prevention seeks to intervene before reaction to a stressor occurs. In home health case management, the goal of primary prevention is to provide therapeutic interventions that will reduce the risk of CHF exacerbation.

According to Neuman (1995), health and wellness refer to the condition or the degree of system stability. Stability infers that all parts and subparts are in balance or harmony with the whole of the client system.

Neuman (1995) describes the client as an interacting open system in complete interface with the internal and external environmental forces or stressors. The client is in a state of constant reciprocal change with the environment and continually moves toward a dynamic state of

stability (wellness) or illness (instability), in varying degrees.

According to Neuman (1995), health is reflected in the level of wellness (stability). When system needs are met, a state of optimal wellness ensues. Conversely, unmet needs decrease client wellness (stability). In Neuman's Systems Model, disruptive forces exist in the environment. Disruptive forces have the capacity to threaten or destroy the system (client). Neuman refers to disruptive forces as stressors, which may have a positive or negative outcome.

Neuman (1995) believes potential and actual reactions to stressors may be mitigated through appropriate early interventions. Neuman's view of system stability and the impact of stressors can be applied to this study in the following manner. For example, a nurse case manager conducted a home visit for a Japanese client with CHF, who had experienced repeat hospitalizations over the past three months. The principle purpose of the home visit was to evaluate meal preparation. During the home visit, the case manager observed an inappropriate use of salt as evidenced by the use of large quantities of soy sauce during meal preparation. According to the patient, family members presented the patient with a large vat of soy sauce from the patient's homeland, Japan, a few months ago. The patient was extremely pleased with the gift and had been using the soy sauce to prepare foods for close friends, neighbors, and invited guests. The case manager recognized

the plausible connection between increased salt consumption (soy sauce) and increased frequency in CHF exacerbations over the past three months and intervened, through patient education. The case manager respectfully recommended the use of low salt soy sauce or other culturally acceptable herbs for daily use, and recommended reserving the soy sauce from Japan for special occasions and only for special guests. Primary prevention in the form of patient education sought to decrease or eliminate the severity of CHF symptoms and preclude CHF exacerbations and reduce the frequency of client re-hospitalizations.

Variant lines of resistance serve to protect the system (client) core integrity from stressors experienced at differing levels. The ideal is to optimize the protective mechanism and reduce or eliminate a stressor reaction (Neuman, 1995). Home health care and appropriate case management interventions, such as nutritional education, monitoring dietary practices, and tracking weight gain in CHF clients, help to decrease adverse outcomes and optimize the client's level of functioning.

Neuman (1995) describes reaction as the patient's responses to secondary prevention measures, which includes the treatment of symptoms to attain optimal system stability or wellness and energy conservation. Dynamic stability may result following an encounter with a stressor. However, if a stressor or series of stressors results in the consumption of energy, in an attempt to

restore stability to the system, and exceeds the system adaptation parameters, death may occur (Neuman). In the case of the CHF client, too much salt (soy sauce) could exacerbate the underlying condition (CHF) and result in a myocardial infarction (MI), or a sudden death episode.

Reconstitution may be viewed as feedback from the input and output of secondary interventions. Reconstitution seeks to maintain optimal wellness by supporting existing strengths and conserving client energy (Neuman, 1995).

According to Neuman (1995), the degree of wellness is determined by the amount of energy required to resume and maintain system stability. When available energy exceeds required energy, the system is stable. Stability is essential to preserve the integrity of the system.

Movements of energy in response to stressors are considered compensatory. Feedback of output into input makes the system self-regulatory in relation to either health maintenance or goal outcome (Neuman, 1995).

By applying Neuman's Systems Model to this study, the case management structure of services provided, and social support may mitigate or reduce stress factors experienced as daily hassles. In addition, adverse conditions that impact or have the potential to impact optimal client functioning or quality of life may be reduced.

Conceptual Map

This study attempts to provide a cross-sectional view of elderly CHF home health care patient's unique life

experiences within the context of their daily life.

According to the Value Indicator Model (VIM) prepared by this researcher (Figure 2), the process begins (α) and ends (Ω) with the patient, who is strategically located in the center of the model. The patient is part of an open and highly dynamic and changeable system. In constructing the VIM, a myriad of contributing variables were recognized and considered as factors with the propensity to impact patient outcomes. Likewise, numerous patient outcomes were considered as potential consequences of various contributing factors. However, the variables and patient outcome selected and included in the conceptual model (VIM) represents the contributing factors and patient outcome this researcher considers the most pertinent, salient, and meaningful to the client's daily life. According to VIM, daily hassles constantly influence the patient. Social support and the organizational structure of case management influence desired patient outcomes, either positively or negatively. Quality of life represents the desired patient outcome. According to the VIM, measured patient outcomes form the basis for value determination. By examining the relationship between the key variables of daily hassles, social support, and organizational structure of case management in relation to a case management sensitive patient outcome of patient quality of life, value determinations can be made. The dynamic nature of energy exchange that occurs within systems plays an important role

in determining the impact of each of the variables on the identified outcome. The value of case management is, therefore, continually evolving and constantly changing. Value determinations are highly subjective and based on the patient's perspective, which may vary from one moment to the next.

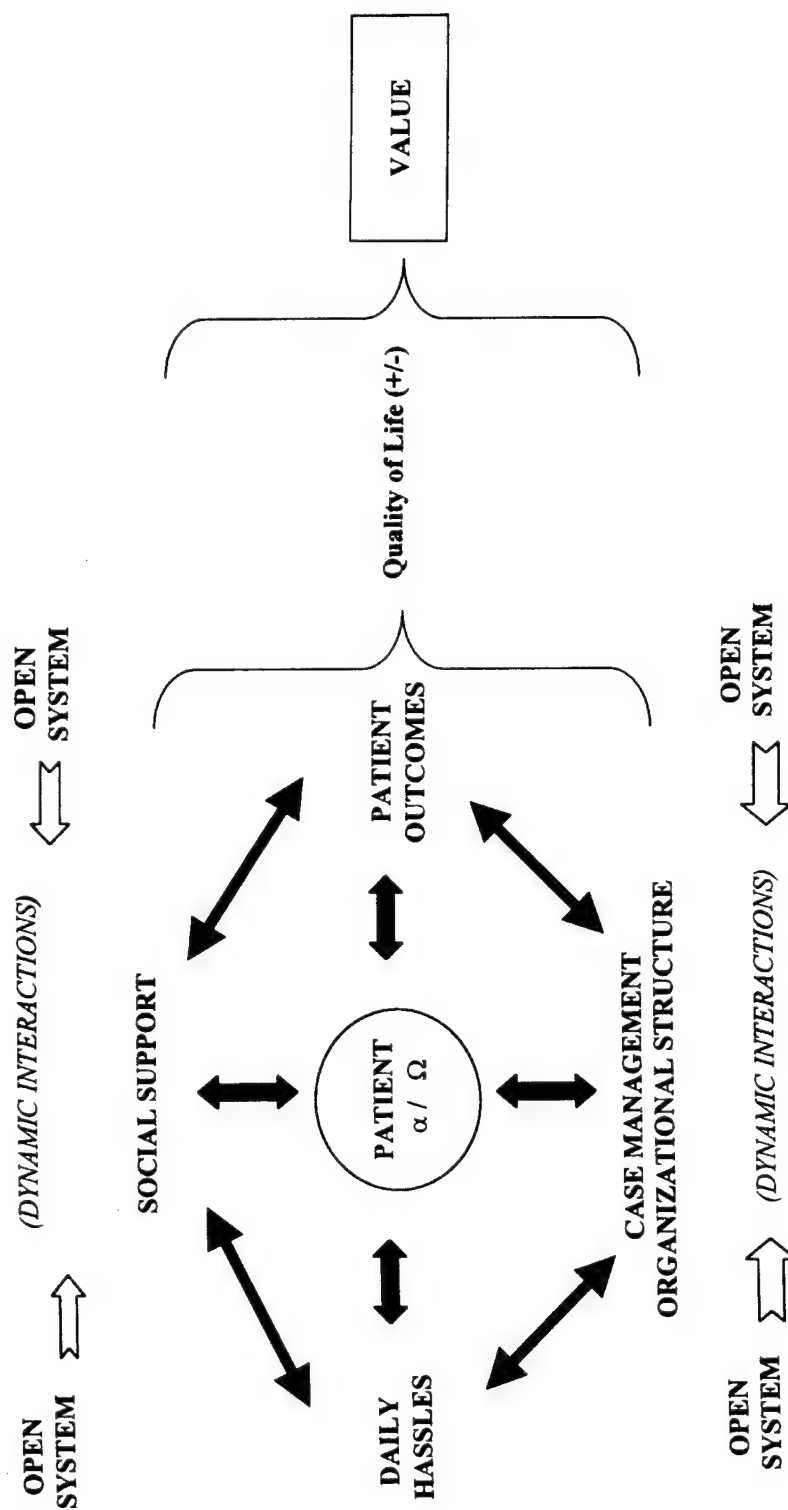


Figure 2. Value Indicator Model (VIM)
(Adapted from Neuman's Systems Model)

The pattern of continuous flow of input and processing of daily hassles, social support, and case management interventions, coupled with output characterized by patient outcomes, is consistent with Neuman's (1995) Systems Model. Dynamic interactions among variables, depicted in VIM as double arrows, suggest a dynamic exchange of energy, as the client moves toward or away from stability, which is directly related to patient outcomes. The open systems identified in VIM punctuate the constant, dynamic interactions and adaptation to daily hassles, social support, and case management interventions.

According to VIM, health is reflected in the level of wellness (quality of life). When the client's needs are met, optimal quality of life will prevail (Neuman, 1995).

In VIM, daily hassles correlate directly to the disruptive forces or stressors described in Neuman's (1995) Systems Model. Social support in VIM represents Neuman's lines of defense and case management interventions form the lines of resistance. Unmediated daily hassles, lack of social support, and sub-optimal case management organizational structure may have a negative impact on the client (Neuman, 1995). Daily hassles are defined as "experiences and conditions of daily living that have been appraised as salient and harmful or threatening to the endorser's well-being" (Lazarus, 1998a, p. 274). Daily hassles are viewed as threatening or harmful due to encumbered demands that tax or exceed the client's

available resources (Lazarus).

Like Neuman (1995), VIM contends that the patient (basic structure) possesses innate characteristics, which help to determine susceptibility to threats and ultimately impact patient survival. Neuman and VIM believe that potential or actual stressors may be mitigated through appropriate early interventions. Interventions are characterized in VIM as actions taken by the case manager and/or social support.

Reaction involves two distinctly different, yet complementary activities in VIM. In one sense, reaction refers to the patient's response to daily hassles and represents a marked increase in energy exchange. Reaction also refers to the patient's response to nurse case management interventions and social support. The goal of reaction in either case is to obtain system stability and wellness, which equates to optimal quality of life.

Reconstitution is an essential element in Neuman's (1995) Systems model and in VIM. Reconstitution, which refers to a return to wellness or stability in VIM, can begin at any degree or level of reaction. The goal of reconstitution in VIM is to ensure the patient achieves and maintains an optimal quality of life (health).

This study seeks to examine the impact of daily hassles, social support, and specific case management organizational structures on the patient's quality of life. Social support and organizational structures of case

management may serve as lines of resistance and/or lines of defense, against daily hassles. Primary, secondary, and tertiary interventions of case management and social support seek to mitigate the reaction to daily hassles and improve the patient's overall quality of life.

Concepts Overview

Several key concepts converge within the study. The model for the study forms a dynamic and intricately woven framework for examining several important concepts such as value; case management and case management organizational structure; daily hassles; social support; and quality of life. Central to the model's concepts is the patient inextricably contained within the context of a dynamic open system. This chapter provides conceptual definitions of the six key concepts of interest. Operational definitions, which stipulate how the concepts will be measured, are provided in Chapter IV (Methodology).

Value

Federal mandates, fiscal constraints, and the advent of managed health care, have increased employer and consumer awareness of health care costs, and generated unprecedented urgency among health care organizations to demonstrate value in services provided. A value-driven health care delivery system strives to be cost-effective; yet ensure consumers receive the highest quality health care for the least amount of money (Allred, Arford, & Michel, 1995a).

Value based decisions are derived by conducting a value analysis. Value analysis is primarily a product-oriented concept, which addresses the decision making process related to the selection of efficient, cost-effective products and services (Hardy & Forrer, 1996).

Value of nursing care can be assessed in terms of achievement of clinical and functional health, client satisfaction, and cost outcomes (Irvine et al., 1998). The value ascribed to health care services is a function of both quality and cost (Arford & Allred, 1995). Value refers to the utility one derives from an action or service (Hendricks & Baume, 1997). Value can also be viewed as a positive or negative perception of patient care services (Blouin & Brent, 1998).

For the purposes of this study, value of nurse case management can be conceptualized and determined by comparing divergent patient-care strategies or systems in relation to effectiveness in attaining outcomes (Arford & Allred, 1995). In this study, the value of case management is determined by examining correlations among differing case management organizational structures and the subsequent impact on patient quality of life.

Case Management

Case management, regardless of the setting or model, includes case finding and referral, assessment, problem identification, outcome identification, monitoring, and evaluation (Lee, et al., 1998). The American Nurses

Association (ANA) describes nursing case management as:

An organized system for delivering health care to an individual client or group of clients. This includes assessment and development of a plan of treatment, coordination of services, and resources and referral (ANA, 1986, p. 21).

Service design for case management varies widely, but always includes resource identification and linking clients to needed services (Lee et al., 1998). The key to effective case management is coordination, monitoring of service delivery, advocacy, and evaluation and/or reassessment. The phases of case management lead to closure or repetition of the cycle (Allred et al., 1995c; Lee et al., 1998).

For the purposes of this study, case management is defined in accordance with the definition adopted by the Case Management Society of America (CMSA) (1998),

Case management is a collaborative process which assesses, plans, implements, coordinates, monitors and evaluates the options and services required to meet an individuals health needs, using communication and available resources to promote quality, cost-effective outcomes.

An example of home health case management client might include a 78-year-old female pending discharge from a local community hospital with a discharge diagnosis of CHF. Once the hospital discharge planner (or other source) makes the

referral for home health services, the home health case management process beings. Case management goals and responsibilities for CHF clients include a comprehensive home health intake assessment; developing a treatment plan with the client and/or initiating a CHF critical pathway; coordinating with the client's primary physician, medical social worker, client family, and other appropriate support services.

Organizational Structure of Case Management

Organizations represent decision-making and information processing systems (Robbins, 1990). Organizations facilitate goal attainment (stability) through ongoing coordination of group effort; decision making, and information processing, which are essential to effective coordination and ultimately goal attainment (Robbins).

Open systems must interact with the environment to survive. Organizations must identify and procure needed resources, interpret and act on environmental changes, ensure appropriate disposition of outputs, and control and coordinate internal activities amidst environmental turbulence and uncertainty (Daft, 1998).

To avoid system overload, the organization must develop the capability to adapt to and synthesize information from a variety of sources. To preclude system overload, some decisions can be delegated to other members of the organization (Robbins, 1990). In other words, the concentration of decision making at single foci can be

dispersed. Delegation or transfer of decision making is the essence of decentralization. Decentralization affords members of the organization greater utility to respond to changing conditions at the point at which change is taking place. However, decentralization is not always desirable. In certain situations, centralization is preferred. Centralization can offer a distinct advantage when a comprehensive perspective is required to make a decision, or where centralization yields superior economic outcomes (Robbins).

Decentralization is directly associated with increased complexity in organizations. Increased numbers of professionals in an organization generally results in improved decision making abilities. In addition, the more employees have attained professional education, the more likely employees are to participate in decision making (Robbins, 1990).

The relationship that exists between centralization and formalization in organizations is ambiguous. Preponderance of evidence suggests no strong relationship between centralization and formalization. However, most research supports a high formalization - decentralization hypothesis (Robbins, 1990).

Alexander (1996) contends that organizational structure is either informal or bureaucratic based on three dimensions: vertical participation, horizontal participation, and formalization. This study concurs with

Alexander's premise. Case management structure in this study, is defined using the tri-dimensional approach developed by Alexander:

- Vertical participation is "the degree to which supervisors and subordinates consult together concerning job-related tasks and decisions" (p. 44).
- Horizontal participation is "the degree to which individuals are involved with peers in decision making and in defining tasks" (p. 44).
- Formalization is "the extent to which rules, procedures, and instruction exist and are used" (p. 44).

An example of high vertical participation in home health care might include a daily team meeting for all case managers to discuss each client's progress towards discharge goals and management strategies for current case loads. An example of low vertical participation might include a case manager who provides input to the case management supervisor regarding the current number of open and closed cases via e-mail, quarterly.

An example of high horizontal participation in home health case management might include a bi-weekly meeting involving all the nurse case managers, home health aids, physical therapists, occupational therapists, dieticians, and speech therapists to plan and evaluate client progress towards discharge goals. An example of low horizontal participation in home health might include a nurse case manager who discharges a patient with CHF prior to

completion and review of the dietician and social worker consults.

An example of high formalization in home health care might include rigid adherence to the rule that all time off must be requested in writing and pre-approved by the case manager supervisor not later than (NLT) 72 hours prior to the proposed time off. An example of low formalization in home health care might include staff self-scheduling and liberal approval of time off.

Daily Hassles

The study of daily hassles is grounded in Lazarus' (1998a) substantive theory of stress and emotion, which focuses on two key concepts, appraisal and coping. According to Lazarus, individual goals and beliefs interact with environmental demands, constraints, personal resources, and provide opportunities to form appraisals about individual experiences (stress reaction) and how the individual copes (adaptation) (Lazarus).

Using a systems perspective, daily hassles represent invading forces that have the propensity to potentially or actually threaten the system (client) functioning. Daily hassles are defined as "irritants that can range from minor annoyances to fairly major pressures, problems, or difficulties" (Lazarus & Folkman, 1989).

An example of daily hassles might include a home health client with CHF who awakens at 2:00 a.m. with shortness of breath and swollen feet. The CHF client is anxiously

anticipating the nurse case manager's visit, which is scheduled for 8:00 a.m. The nurse phones the patient at 7:35 a.m. and explains that the spring on her garage door just snapped; she is unable to get the car out of the garage and will be delayed by about one hour. Torn between empathy, anger, and despair, the patient decides to make a pot of coffee and finds the box of coffee filters is empty.

Daily hassles are an inevitable part of human life. Daily hassles may be experienced infrequently or repeatedly in any given period of time (Lazarus, 1998b).

Social Support

Four defining attributes of social support delineate all possible acts that constitute support. Social support attributes include emotional, instrumental, informational, and appraisal support (Berkman, 1984; Langford et al., 1997; Tilden, 1985). Within the process of each defining attribute of social support, active exchange and/or reciprocity must occur if the support is to continue (Langford et al.).

Emotional support includes the provision of caring, empathy, love, and trust (Cobb, 1976; Langford et al., 1997). Emotional support is thought to be the most important attribute of social support. Support is conveyed to others through perceived emotional support (Cobb, 1976; Ducharme, 1994; Heltsley & Powers, 1975; Langford et al., 1997). Emotional support involves the subjective feeling of belonging, of being accepted, of being loved, and of

being needed (Cobb; Langford et al.). An example of providing emotional support might include an adult child who actively listens when a parent is distressed, overwhelmed, or frustrated, with new ill-fitting and painful dentures. Active listening communicates empathy, acceptance, understanding, and mutual respect.

Instrumental support involves the provision of tangible goods, services, or aid to an individual in need (Langford et al., 1997). Although instrumental support may imply caring and love for an individual, instrumental support is distinguishable from emotional support (Langford et al.). An example of instrumental support might include an adult child buying groceries, or paying the electric bill, providing housekeeping services, or cooking for an elderly parent. Instrumental activities are comprised of concrete assistance, which may include providing monetary assistance or performing tasks for others (Langford et al.).

Informational support is comprised of information provided to a person during a stressful time or situation and may involve assistance with problem solving (Barrera, 1986; Cobb, 1976; Langford et al., 1997). An example of informational support might include an adult child providing an elderly parent with information related to senior support programs and activities. Another example might include an adult child providing an elderly parent with the name of a reliable yet inexpensive lawn service or veterinarian who provides discounts to senior citizens.

Appraisal support includes the communication of information that is relevant to self-evaluation, instead of problem solving (Langford et al., 1997). Appraisal support can be viewed as affirmational or validative support, which encompasses the affirmation or validation of acts or statements made by another person (Barrera, 1986; Cobb, 1976; Langford et al.). An example of appraisal support might include an adult child concurring with an elderly parent's decision to hire someone else to do the lawn work, because of the increasing physical demands and increased recovery period required each time the parent mows and edges the lawn.

Social support is comprised of three distinctly different, yet interdependent dimensions. Social support exists within a social network, social embeddedness, and social climate (Langford et al., 1997).

Social networks, provide the necessary structure for supportive interactive processes (Cohen, 1988; Langford et al., 1997). An example of a social network might include church groups, informal work groups, immediate and/or extended family members, card partners, walking groups, and a myriad of other possibilities.

Social embeddedness refers to how connected people feel to significant others within an established social network (Barrera, 1986; Langford et al., 1997). An example of social embeddedness might include an elderly member of a group who phones another member who missed a scheduled card

party or other regularly scheduled event.

Social climate refers to the personality of the environment, which may be helpful or protective (Langford et al., 1997). An example of a protective environment is when an adult child phones daily to check on the status of an elderly parent.

Without a structure of people (network) and feelings of connectedness (embeddedness) required to generate an atmosphere of protection and help (social climate), social supportive behavior cannot occur (Langford et al., 1997). Positive social interactions are extremely important to the elderly and are associated with positive health outcomes (Berkman, 1984; Choi & Wodarski, 1996; Langford et al.).

For the purposes of this study, social support can be conceptualized as the availability of emotional, instrumental, informational, and appraisal support within the context of a social network, social embeddedness, and social climate. Social support is defined as the "perceived availability and actual provision of reliable assistance from other persons" (Johnson & Maas, 1997).

Quality of Life

Quality of life is a highly complex, multidimensional construct. Almost everyone can identify with the idea of quality of life; at the same time, almost everyone has difficulty in clearly articulating the meaning of quality of life. Consequently, most definitions of quality of life include a broad set of attributes and/or multiple

dimensions. Campbell, Converse, and Rodgers (1976) were among the earliest authors who described quality of life as, satisfaction with life. Ferrans (1990a) described quality of life as "a person's sense of well-being that stems from satisfaction or dissatisfaction with the areas of life that are important to him/her" (p. 15). Papadantonaki et al. (1994) defined quality of life as "satisfaction with aspects of life that are important to the individual" (p. 45). Raphael et al. (1995) defined quality of life as "the degree to which a person enjoys the important possibilities of his/her life" (p. 229), where enjoyment is related to self-reported satisfaction.

The only consensus among the widely diverse group of authors, from early writings during the 1970s to more recent literature, is that life satisfaction in the most common and most important dimension used to define quality of life (Ferrans, 1990a, 1990b, 1996; Ferrans & Powers, 1985; Foreman & Kleinpell, 1990; Grant et al., 1990; Jallowiec, 1990; Meeberg, 1993; Molassiotis, 1997; Papadantonaki et al., 1994; Raphael et al., 1995). Various dimensions of quality of life may differ based on an individual's age and perspective; nevertheless, life satisfaction remains an important dimension even among elderly populations (Foreman & Kleinpell). A sense of psychological well-being can be conceptualized to equate to life satisfaction, especially among the elderly (Ducharme, 1994; Langford et al., 1997).

Most patients strive to obtain a more 'effective' life and to preserve the highest possible level of functioning and well-being (Ware & Sherbourne, 1992). General health concepts that represent basic human values relevant to functional status and well-being can be used to measure an individual's perceived quality of life (Ware & Sherbourne).

Ware (1993) identified the eight health concepts that represent basic human values relevant to each individual's functional status and well-being to measure health-related quality of life outcomes. The health concepts include 1) physical functioning, 2) role limitations due to physical health problems, 3) bodily pain, 4) general health, 5) vitality (energy/fatigue), 6) social functioning, 7) role limitations due to emotional problems, and 8) mental health (psychological distress and psychological well-being) (Ware, p. 3:4). To monitor an individual's progress over time, Ware included an additional measure, the patient's reported health transition, to capture the subjective amount of change in a client's health over a one-year period. Ware's (1998b) eight health concepts and reported health transition used to measure health-related quality of life are defined as follows:

- Physical Functioning: The extent to which health limits physical activities such as self-care, walking, lifting, and vigorous exercises.
- Role Functioning-Physical: Extent to which physical health interferes with work or other daily

activities, including limitations in the kind of activities, or difficulty in performing activities.

- Bodily Pain: Intensity of pain and effect of pain on normal work, both inside and outside of the home.
- General Health: Personal evaluation of health, including current health, health outlook, and resistance to illness.
- Vitality: Feeling energetic and full of pep versus feeling tired and worn out.
- Social Functioning: Extent to which physical health or emotional problems interfere with normal social activities.
- Role Functioning-Emotional: Extent to which emotional problems interfere with work or other daily activities, including decreased time spent on activities, accomplishing less, and not working as carefully as usual.
- Mental Health: General mental health, including depression, anxiety, behavioral emotional control, general positive effect.
- Reported Health Transition: Evaluation of current health compared to one year ago.

For the purpose of this study, quality of life can be conceptualized as an individual's level of functioning and well-being (Ware, 1993). Quality of life can be defined as satisfaction with life (Campbell et al., 1976).

Summary of Concepts

Nursing focuses on organizing nursing care within health care agencies and systems to prevent illness and disability, promote physical and psychological health, and to bolster the client's quality of life (Strickland, 1998). The ultimate validation of effectiveness of any nursing intervention or program is the nature of the outcomes that result. A major challenge for nursing researchers is to demonstrate the true worth (value) of nursing interventions and provide clear and tangible evidence of the effectiveness of clinical practice (Strickland).

This study seeks to articulate the value of nurse case management in home health by examining the relationship between daily hassles, social support, and the subsequent impact on the patient's quality of life. This study ultimately measures the effectiveness of case management organizational structure by examining the patient outcome of quality of life.

Research Question

The research question for this study conducted on elderly clients (age 65 or older) receiving home health services from South Carolina DHEC is fundamental to the determining the value of nurse case management. This study's fundamental research question asks:

What is the influence of daily hassles, social support, and case management organizational structure on patient quality of life?

Chapter IV

METHODOLOGY

This chapter contains the methodology for determining the value of nurse case management in home health care among elderly clients with CHF who are receiving home health services. Specifically, this chapter presents the methodology for examining the relationship between daily hassles; case management organizational structure; social support; and subsequent impact on the patient care outcome of quality of life. This chapter also describes the research design, setting, sampling procedure, data collection, and data analysis techniques. The research variables are operationally defined; research instruments are described; and instrument reliability and validity are presented. In addition, study limitations, ethical considerations, and safeguards to protect the rights of human subjects are discussed.

Study Design

This study employs a descriptive correlational design to examine the relationships between daily hassles, social support, case management organizational structure, and a targeted patient outcome, quality of life, among elderly CHF clients receiving home health services. A descriptive correlational design was selected due to the absence of

previous studies using this particular combination of variables. The purpose of descriptive correlational designs is to investigate relationships that exist within a given situation (Burns & Grove, 1997); therefore, a descriptive correlational design was the optimal design for this study. This study provides keen insight into the strengths and weaknesses of the research plan and instruments, and yields information about the potential for further research.

Setting

This study was conducted within three of the thirteen Home Health Districts of the South Carolina Department of Health and Environmental Control (DHEC). Specifically, Appalachia III, Edisto, and Waccamaw Districts. DHEC HHCS was selected for many reasons. DHEC home health clients and case managers represented familiar and easily accessible groups. DHEC's longstanding support of the University of South Carolina College of Nursing in research and other academic activities was a major determinant. Existing collegial relationships with Home Health District directors and/or program nurse specialists (PNSs) greatly facilitated access to study participants.

Due to the recent ramifications of the interim payment system (IPS) in home health, this study involving DHEC home health clients and case managers was appropriate and timely. Recent changes in Medicare reimbursement brought about by IPS are forcing agencies to examine current

service delivery and utilization patterns (Case, 1998). Current fiscal constraints and the call for increased accountability for health care spending have altered the standards for determining effectiveness in health care organizations. Today, health care costs and patient outcomes represent the primary determinants of success in health care. Health care agencies are compelled to articulate value by providing evidence of measurable impact on patient outcomes (Irvine et al., 1998).

From an organization theory view, DHEC represents a matrix, which is a form of adhocracy (Robbins, 1990). A matrix represents an organization design that assigns specialists from specific functional areas to work on one or more interdisciplinary teams, which are led by project leaders (Robbins). DHEC operates multiple interdependent specialty programs. Although each DHEC program has a specific purpose with specific and unique goals, a concentric mission and vision drive all DHEC programs.

DHEC Home Health Care Services (HHCS) provides certified and licensed home health care services throughout the entire state of South Carolina. Each of the 13 DHEC Home Health Care Districts operates under the general guidelines dictated by the federal and state government, however each home health district enjoys a certain level of autonomy in defining local operations. Consequently, each home health district has the potential to operate under a distinctly different organizational structure. The current

economic environment in home care and the underlying desire to optimize service delivery patterns, coupled with the urgency to demonstrate value of services, made DHEC HHCS the ideal setting to conduct this study.

Sample

The target population for this study was comprised of all DHEC HHCS registered nurses (case managers), from three of the 13 DHEC Home Health Districts. Specifically, case managers from Appalachia III, Edisto, and Waccamaw Districts. Each of the Districts was selected based on investigator convenience and District willingness to participate. The target population also included all patients age 65 and older with a diagnosis of CHF who were receiving home care services under the direction of a nurse case manager from the same DHEC home health districts during the time of the study.

Specific patient criterion for selection included any English speaking and reading adult, age 65 or older, diagnosed with CHF, who exhibited the ability to comprehend and execute paper and pencil surveys. Nurse case manager criterion included any English speaking and reading home health registered nurse charged with the responsibility of promoting quality and cost-effective care by assessment, planning, implementation, coordination, monitoring, and evaluation of options and services required to meet the client's unique health needs.

The sample for this study was designed to include two

or more groups of nonrandom individually matched pairs. The study called for a convenience sample of 60 CHF patients to be matched to the nurse case managers, so that each patient outcome could be directly correlated to the nurse case manager who provided home care services. A sample size of 60 was projected to ensure sufficient statistical power during the data analysis phase of the study.

The target population and parameters were identified, however the actual study sample varied slightly from the proposed study population. The actual sample consisted of a total of 23 *predominantly* elderly CHF patients and a total of 15 DHEC HHCS nurse case managers from across the state of South Carolina. A total of three of the 13 DHEC HHCS Districts actually participated in this study.

Data Collection

A cross-sectional design was used to facilitate timely collection of data. An investigational package containing two letters of introduction, two sets of demographic questions, and four different paper and pencil surveys was distributed to all nurse case managers who were interested in participating in the study. One letter of introduction was designed specifically for patients who elected to participate in the study. The patient's letter of introduction served as the client's informed consent form (Appendix A). Another letter of introduction was designed for nurse case managers who chose to participate in the

study. The case manager's letter of introduction served as the nurse's informed consent form (Appendix B). The mechanism for disbursement of the investigational packets and surveys is discussed later in this section. Each letter of introduction, set of demographic questions, and each patient and nurse case manager survey was clearly labeled to facilitate accurate completion of the surveys. All information pertaining to the patient was labeled 'Patient Survey' and all nurse case manager information was labeled 'RN Survey', using a commercially prepared red ink stamp.

Nurse case managers were asked to complete a set of demographic questions (Appendix C) and two surveys, the Alexander Structure Instrument (1986) (Appendix D); and Social Support Outcome (Johnson & Maas, 1997) (Appendix E). The surveys take about 15 minutes to complete. Nurse case managers were instructed to return the case manager demographic questions and the two RN surveys in one of the postage paid and pre-addressed stamped envelopes provided in the package. Nurse case managers were instructed to retain the investigator's letter of introduction (Appendix B), which served as the nurse's informed consent. Nurse case managers were asked to distribute the remaining set of demographic questions and two patient surveys to clients in their case load with a diagnosis of CHF, who were age 65 or older, English speaking and reading, with the ability to comprehend and execute paper and pencil surveys.

Patients were asked to complete a set of demographic questions (Appendix F) that facilitated the identification of the DHEC home health district and specific home health site information. Surveys completed by the patient included: 1) The Daily Hassles Scale (Lazarus & Folkman, 1989) (Appendix G); and 2) The SF-36™ Health Survey (Ware, 1998a) (Appendix H). The surveys take about 25 minutes collectively to complete. Patients were instructed to return the completed set of demographic questions and surveys in the remaining postage paid and pre-addressed stamped envelope provided in the package. Patients were also instructed to retain the investigator's letter of introduction (Appendix A), which served as the client's informed consent form.

The investigator conducted site visits to as many home health districts as possible to facilitate interest and garner support from the district program nurse specialists, district directors, and case managers prior to distribution of the investigational packages. The investigator attended staff meetings in the Edisto DHEC HHCS District, and met with team leaders and nurse managers, to provide an overview of the research proposal two months prior to distribution of the research materials. The investigator also met with the DHEC HHCS Program Nurse Specialist (PNS) in the Waccamaw district prior to distribution of research materials. Due to unanticipated logistical barriers, telephone conference calls were conducted with the PNS from

the Appalachia III District. A comprehensive overview of the research project was hand carried, faxed, and/or mailed to the PNS in Appalachia III, Edisto, and Waccamaw Districts prior to the distribution of research materials. Participating District Home Health PNSs or District directors met with District team leaders and case managers to discuss participation in the study. Team leaders and case managers reviewed current patient caseloads to identify potential CHF participants. The PNS's distributed the investigational packages once case managers and patients agreed to participate.

All investigational packages, sets of demographic questions, and surveys were assigned an investigational number to ensure that individual matched pairing of the returned demographic questions and surveys could be accomplished. The coding for the investigational package consisted of the following repeated numerical sequence:

- 1 CMD (Appendix C)
- 1 ASI (Appendix D)
- 1 SS (Appendix E)
- 1 PD (Appendix F)
- 1 DH (Appendix G)
- 1 QOL (Appendix H)

Investigational
Packet #1

- 2 CMD (Appendix C)
- 2 ASI (Appendix D)
- 2 SS (Appendix E)
- 2 PD (Appendix F)
- 2 DH (Appendix G)
- 2 QOL (Appendix H)

Investigational
Packet #2

Where: CMD=Case Manager Demographic Survey, ASI=Alexander Structure Instrument, SS=Social Support Outcome Instrument, PD=Patient Demographic Survey, DH=Daily Hassles Scale, and QOL=SF-36™ Health Survey.

No mechanism was included to identify participants on the completed surveys. Integrity among the matched pairs of case managers and patients was accomplished through the numerical coding sequence previously described. Data from incomplete numerically coded sets were not included in the study. The study design called for 60 complete sets of case manager and patient surveys. Participation in this study was voluntary and participants were allowed to withdraw at anytime.

Instruments

The instruments were selected based on the theoretical and conceptual congruence with the research variables of interest. Other key considerations were based upon the anticipated limiting factors of the target population of elderly clients with CHF. Ease of completion, readability, and time required to complete the composite of instruments were primary considerations.

Four research instruments and two demographic surveys were used in the study. The research instruments were used to examine the variables of case management organizational structure, daily hassles, social support, and patient quality of life. A description of the research instruments, operational definitions, and instrument reliability and validity is presented in the following four segments. In addition, rationale for the inclusion of nurse case manager and home health client demographic questions is provided.

Case Management Organizational Structure

This study was based on the premise that DHEC home health nurses utilize a nurse case management model for home health service delivery. Therefore, the process of nurse case management was not examined in this study.

Organization structure refers to the hierarchy of authority, formal grouping together of individuals, and systems which ensure effective communication, coordination, and integration of effort throughout the organization (Daft, 1998). Structure is the allocation of specific work roles and administrative mechanisms to control and integrate work efforts among members of organizations (Alexander & Bauerschmidt, 1987).

Since organizations perform as systems, the structure of organizations can be determined by various environmental conditions (Daft, 1998). Structure is described as mechanistic when the external environment is stable and the internal organization consists of formalization, a clear hierarchy of authority, and centralization (Burns & Stalker, 1994; Daft, 1998). Structure is organic in dynamic environments when the internal organization is adaptive, less formalized, with unclear hierarchy of authority, and decentralization (Burns & Stalker; Daft).

Structure is operationally defined using the tri-dimensional approach of Alexander (1996), that includes vertical participation, horizontal participation, and formalization. Structure is measured by the Alexander

Structure Instrument (Appendix D), which is a 14 item, five point, Likert type scale survey, originally developed by Leifer and Huber (1977), and later adapted by Alexander (1986). The nurse case managers were asked to complete the Alexander Structure Instrument, which takes about 10 minutes to complete. The Alexander Structure Instrument measures the flexibility of relationships among personnel in various work settings (Alexander et al., 1993; Cumbey, 1995). Responses are anchored at five points: 1=never, 2=seldom, 3=sometimes, 4=often, and 5=always. Respondents were directed to indicate a response that was most representative of the DHEC home health agency in which the respondent works. Scoring of the instrument occurred as follows: 1=mechanistic structure and 5=organic structure. Scores were obtained on three subscales of vertical participation (VP), horizontal participation (HP), and formalization (F). The individual items comprising the subscales of the instrument are identified in Table 2. Scores may range from 5-25 for vertical participation, 7-35 for horizontal participation, and 2-10 for formalization. The instrument was selected for its simplicity, noted distillation of structural concepts contained in other instruments, and previous testing in community settings (Cumbey, 1995).

Previous studies in acute care, psychiatric, and long term care, showed a significant degree of concurrent validity between specific questions, giving definitions of

Table 2.

Subscales of the Alexander Structure Instrument

Scale	Item	Reverse-Scored (*)
Vertical Participation (VP)	Q3	
	Q4	
	Q5	
	Q6	
	Q7	
Horizontal Participation (HP)	Q1	*
	Q2	*
	Q8	*
	Q9	*
	Q10	*
	Q11	*
	Q13	*
Formalization (F)	Q12	*
	Q14	*

Note. (Cumbey, 1995, p.83)

each dimension, and the structural dimension scores (Alexander, 1986; Alexander, Thomas, & Cumbey, 1993; Cumbey, 1995). A greater degree of variability of responses to concurrent validity questions and the structure dimension score was demonstrated in the home health setting (Alexander et al.; Cumbey).

Reliability coefficients for the Alexander Structure Instrument are well established. The reliability coefficients for Alexander's structure dimensions of vertical participation, horizontal participation, and formalization from previous studies in acute care

(Alexander & Randolph, 1985; Alexander, 1986), and public health settings (Alexander et al, 1993; Cumbey, 1995) is summarized in Table 3.

Table 3.

Alpha Coefficients for the Alexander Structure Instrument from Previous Studies: Alexander, (1986); Alexander & Randolph (1985); Alexander, Thomas, & Cumbey (1993); Cumbey, (1995).

Scale	Alexander & Randolph (1985) Acute Care	Alexander (1986) Acute Care	Alexander, Thomas, & Cumbey (1993) Home Care	Cumbey (1995) Home Health & Clinics
VP	.74	.67	.83	.83
HP	.63	.72	.54	.72
F	.61	.55	.64	.71

Note. VP=Vertical Participation, HP=Horizontal Participation, F=Formalization

The reliability coefficients for Alexander's structure dimensions of vertical participation, horizontal participation, and formalization were re-evaluated in this study. A summary of the reliability coefficients of the tri-dimensions of structure is illustrated in Table 4.

The alpha coefficients obtained in this study exceed the reliability coefficients previously obtained in acute care and public health settings in each of the dimensions

Table 4.

Alpha Coefficients for the Alexander (1986) Structure
Instrument from DHEC HHCS 1999

Scale	DHEC HHCS
Vertical Participation (VP)	0.91
Horizontal Participation (HP)	0.78
Formalization (F)	0.82

of organizational structure. Admittedly, the sample size in this study is quite small; nevertheless the findings of this study are consistent with previous studies and continue to support the validity of the Alexander (1986) Structure Instrument.

Daily Hassles

The prevailing approach to measuring psychological stress prior to the 1990s was the use of life events scales, which were based on the work of Holmes and Rahe (1967). The power of life events scales to explain or predict effects on health has proved to be extremely limited, in both cross-sectional and prospective studies, with zero-order correlations typically being in the range of .2 to .3 (Lazarus & Folkman 1989). Psychosomatic efforts to improve these correlations have yielded little success (Lazarus & Folkman). The limitations in the life events approach led to the development of a measure of

psychological stress that was designed to better reflect the daily occurrences of stress in people's lives, whether seemingly minor or major events, that can be sources of harm, loss, threat, or challenge. Such occurrences were referred to as *daily hassles*, which is the name of the instrument used in this study.

The Daily Hassles scale (Lazarus & Folkman, 1989) (Appendix G) consists of 117 items used to measure the frequency and perceived severity of a person's transactions with the environment that are considered by the person to be stressful events. The instrument is a self-administered survey, which takes about 5 to 10 minutes to complete. Home health clients who met the patient selection criteria were instructed to respond to the following question. Respondents were asked: How much of a hassle was this for you? Respondents indicated how much of a hassle the experience was based on a specified period of time determined by the investigator. For the purposes of this study, the time period established for all participants was daily hassles that occurred within the "past month". When administering the instrument, explicit instructions must be given to the participants about the time frame to consider in marking the items. The time frame specified in the instructions yields a considerable difference in the content and frequency of hassles reported (Lazarus & Folkman). Responses were anchored at four-points in terms of severity: 0=none or did not occur, 1=somewhat severe,

2=moderately severe, 3=extremely severe. Scoring was accomplished by hand scoring the test booklet. Two scores were possible: 1) frequency, which refers to the number of hassles endorsed by the participant without regard to severity, and 2) severity, which is the average severity rating of all items that were selected (Lazarus & Folkman). Daily hassles scores may range from 0 to 117 for frequency and from 0 to 451 for severity. For the purposes of this study, frequency and severity were examined separately. The client severity score offers the most poignant insight into the saliency of daily hassles. Therefore, the severity score is used to examine the impact of daily hassles on the client's quality of life. Frequency scores provide additional insight and are included in the descriptive analysis of the Daily Hassles Scale, as well as the sample's most frequently reported (top five) daily hassles.

Since daily hassles scores reflect states, which represent changeable psychological stress responses, the item *stability* may be more appropriate than the traditional psychometric term *reliability* (Lazarus & Folkman, 1989). To determine the stability of the daily hassles scores, scores from each successive pair of time periods in the Kanner et al. (1981) study were correlated and then averaged over the nine-month period described in the study. Hassles frequency scores proved to be quite stable over this time period (.79), which suggests that hassles scores

have both trait and state characteristics, each reflecting, empirically and theoretically, a different side of the same coin (Lazarus & Folkman). The average of the correlations between monthly frequency scores (.79) was significantly higher than the average between monthly severity scores (.48). This difference may be due to the fact that although hassles tend to demonstrate considerable stability over time, subjects may not endorse the same hassles items from month to month (Lazarus & Folkman).

The Daily Hassles Scale assesses events that are appraised as stressful to the individual completing the survey. Substantive evidence suggests that use of a proximal measure of stress based on personal significance provides a better explanation and prediction of psychological stress and emotion, and subsequent effects on adaptational outcomes than any other approach (Lazarus & Folkman, 1989).

The best evidence of the construct validity of the Daily Hassles Scale comes from cross-sectional and prospective data in which hassles scores have been used as a means to explain or predict psychological symptoms and symptoms of somatic illness and emotional distress (Lazarus & Folkman, 1989). Kanner et al. (1981) concluded hassles scores were strongly related to both affective distress and psychological symptoms. In the study conducted by Kanner et al., hassles frequency, aggregated over nine months, correlated .34 with Bradburn negative affect scores, also

aggregated over nine months. Likewise, using multiple regression analysis, with life events and daily hassles as independent variables and psychological symptoms and somatic health status as dependent variables, both Kanner et al. and DeLongis et al. (1982) concluded that daily hassles explained more variance than did life events. When life events scores were controlled as a source of variance, daily hassles remained a powerful predictor. However, when daily hassles score were controlled, life events exhibited no additional effect. All the explanatory variance was attributable to daily hassles, which suggests that daily hassles serve to mediate the effects of life events on adaptational outcomes and independently effect outcomes (Lazarus & Folkman, 1989). The findings of Kanner et al. and DeLongis et al. and scores of additional research conducted since the advent of the original *Berkeley Stress and Coping Project* in 1977, clearly substantiates the goals and hypothesis which formed the basis of development of the Daily Hassles Scale.

The cumulative results of numerous studies provide three conclusions. First, a causal path between major life events and psychological symptoms independent of daily hassles does not exist. Second, even with confounding items removed, daily hassles were strongly associated with psychological symptoms, to a much greater degree than were life events. Third, daily hassles, defined by subjective appraisals, were found to function as both a dependent and

an independent variable in causal models (Lazarus & Folkman).

Due to the nature and design of this instrument, further evaluation of psychometric properties was not conducted in this study. Evidence from previous studies of Kanner et al. (1981) and DeLongis et al. (1982) provide substantive evidence of instrument reliability and construct validity.

Social Support

Restructuring of the U.S. health care system to increase economic efficiency has resulted in an emphasis on health care cost and patient outcomes as measures of system effectiveness. The increased importance placed on patient outcomes in the current political and economic arenas has renewed the urgency for outcome development in nursing (Johnson & Maas, 1997).

Johnson and Maas (1997) published a notable text, which represents the work of a research team at the University of Iowa. Johnson and Maas identified outcomes and related measures at the individual patient level, which can be used to evaluate nursing care across the entire spectrum of patient care. The outcomes identified by Johnson and Maas are not limited to specific conditions or setting, although some outcomes are clearly more useful and may be used more frequently in a particular setting or with a specific patient population.

The Nursing-Sensitive Outcomes Classification (NOC)

described by Johnson and Maas (1997) represents the first comprehensive list of standardized outcomes, definitions, and measures to describe patient outcomes influenced directly by nursing practice. The outcomes identified by Johnson and Maas are presented as neutral concepts that reflect patient states that can be measured on a continuum rather than as discrete goals that are met or not met. The neutrality of concepts facilitates the identification and analysis of outcomes currently achieved by the patient and also facilitates the identification of realistic standards of care for specific patient populations.

The NOC outcome selected for this study was the Social Support Outcome (Appendix E). The Social Support Outcome is a 13 item instrument comprised of a five-point Likert-type scale, which measures the "perceived availability and actual provision of reliable assistance from other persons" (Johnson & Maas, 1997, p.281). Case managers were asked to evaluate the patient's current level of social support, using the Social Support Instrument (Appendix E) developed by Johnson and Maas, which takes about five minutes to complete. Responses were anchored at five points: 1=none, 2=limited, 3=moderate, 4=substantial, 5=extensive.

Unfortunately, scoring of the instrument lacks refinement. The indicator scale provides assistance in determining the patient's rating on the outcome scale, but the scales are currently not weighted to provide a mean or summated rating. Johnson and Mass recommend that

practitioners use both the range and the frequency of patient ratings on the indicator scale as an aid in arriving at the outcome rating. For the purposes of this study, scoring was accomplished by hand scoring the survey. One overall score, which reflects the perceived degree of assistance provided to clients, is identified. This score represents the cumulative degree of assistance rating of the 13 items listed on the survey. Social support scores may range from 13 to 65. The frequency of the degree of assistance ranging from 1=none, 2=limited, 3=moderate, 4=substantial, 5=extensive was also analyzed.

Although the scales have been used in pilot studies and field testing, statistical analysis of the scales is necessary to ensure reliability and validity (Johnson & Maas). The current classification system represents the completion of the beginning phases of research to develop a taxonomy of nursing-sensitive patient outcomes. Results of psychometric testing for reliability and validity are incomplete and not available at this time. Due to the stage of development of this instrument, psychometric properties were not evaluated in this study.

This instrument was selected based on availability and parsimonious representation of the concept of interest, social support. Use of this instrument helps to expand the body of knowledge related to use of NOC system in nursing research. Feedback from this study may prove valuable to the primary research team at the University of Iowa.

Quality of Life

Measurement of quality of life is a foreboding task due to the multiple dimensions and overlapping concepts within the construct. Dean (1997) concluded that quality of life is a multidimensional concept, which requires a conceptual framework to identify the composite elements.

Ware and Sherbourne (1992) constructed an appropriate framework for measuring quality of life and composite concepts. A 36-item short-form (SF-36™) clinical measurement and classification tool (Appendix H) was developed for clinical practice and research, health policy evaluation, and general population surveys. The SF-36™ is comprised of one multi-item scale, which measures eight distinct health concepts: 1) physical functioning; 2) role limitations due to physical health problems; 3) bodily pain; 4) social functioning; 5) general mental health; 6) role limitations due to emotional distress; 7) vitality (energy/fatigue); and 8) health perceptions (Ware & Sherbourne). The eight health concepts contained in the SF-36™ form the basis for examining client quality of life.

Each patient was asked to complete the SF-36™ survey, which takes about 5 minutes to complete. Clients were directed to answer each question by marking the response (filling in the circle) that best corresponded to their view at the time the survey was completed. Some of the responses were anchored to Likert type scales ranging from three to six graded responses, while others required simple

dichotomous responses. For example item 9a. inquires:

- How much of the time during the past 4 weeks did you feel full of pep?
 - All of the time
 - Most of the time
 - A good bit of the time
 - Some of the time
 - A little of the time
 - None of the time

While item 4b. explores:

- During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?"
 - Accomplished less than you would like?
 - Yes
 - No

The SF-36™ survey assesses client views about health. The survey examines health concepts that represent basic human values that are relevant to every person's functional status and well-being (Ware, 1987). The generic health measures are designed to assess health related quality of life outcomes proven to be directly effected by disease and treatment (Ware, 1993). Ware and colleagues used the corresponding full-length Medical Outcomes Study scale as the criterion for selecting the SF-36™ individual items. Items in the SF-36™ subscales were selected to reproduce the "parent" scale as much as possible. For example, the physical functioning scale in the SF-36™ is designed to capture distinct aspects of physical functioning, which

requires sampling a range of severe and minor physical limitations. Therefore, the full-length (10 item) MOS Physical Functioning scale was adopted in the SF-36™ without modification from the original SF-20 (Ware, 1993). Conversely, a four-item measure of vitality (energy level and fatigue) that was not included in the SF-20, was added to capture subtle differences in subjective well-being (Ware). An illustration of the SF-36™ multi-item scales is included in Table 5.

The SF-36™ is designed to measure eight distinct health attributes using eight multi-item scales containing 2 to 10 items each as illustrated in Table 5 (Ware, 1993, p. 3:11). For example, the client's bodily pain is assessed in item 7 and 8 (2 items), and physical functioning is assessed in items 3a through 3j (10 items). A summary of the number of items used in each of the multi-item scales is as follows:

- PF = Physical Functioning (10 items)
- RP = Role-Physical (4 items)
- BP = Bodily Pain (2 items)
- GH = General Health (5 items)
- VT = Vitality (4 items)
- SF = Social Functioning (2 items)
- RE = Role-Emotional (3 items)
- MH = Mental Health (5 items)

The multi-item scales are scored using Likert's (1932) method of summated ratings. Likert's method is based on specific scaling assumptions that can be tested. For

Table 5.

Abbreviated Content for Items in Each SF-36™ Scale (Ware, 1993, p. 5:2).

Scale	Item ^a	Abbreviated Item Content
Physical Functioning (PF)	3a	Vigorous activities, such as running, lifting heavy objects, strenuous sports
	3b	Moderate activities, such as moving a table, vacuuming, bowling
	3c	Lifting or carrying groceries
	3d	Climbing several flights of stairs
	3e	Climbing one flight of stairs
	3f	Bending, kneeling, or stooping
	3g	Walking more than a mile
	3h	Walking several blocks
	3i	Walking one block
	3j	Bathing or dressing
Role-Physical (RP)	4a	Cut down the amount of time spent on work or other activities
	4b	Accomplished less than would like
	4c	Limited in the kind of work or other activities
	4d	Difficulty performing the work or other activities
Bodily Pain (BP)	7	Intensity of bodily pain
	8	Extent pain interfered with normal work
General Health (GH)	1	Is your health: excellent, very good, good, fair, poor
	11a	I seem to get sick a little easier than other people
	11b	I am as healthy as anybody I know
	11c	I expect my health to get worse
	11d	My health is excellent
Vitality (VT)	9a	Feel full of pep
	9e	Have a lot of energy
	9g	Feel worn out
	9i	Feel tired
Social Functioning (SF)	6	Extent health problems interfered with normal social activities
	10	Frequency health problems interfered with social activities
Role-Emotional (RE)	5a	Cut down the amount of time spent on work or other activities
	5b	Accomplished less than would like
	5c	Didn't do work or other activities as carefully as usual
Mental Health (MH)	9b	Been a very nervous person
	9c	Felt so down in the dumps nothing could cheer you up
	9d	Felt calm and peaceful
	9f	Felt downhearted and blue
	9h	Been a happy person
Reported Health Transition (HT)	2	Rating of health now compared to one year ago

instance, Likert's method assumes that the distribution of responses to items within the same scale and item variances are roughly equal. Likert's method also assumes each item has a substantial linear relationship with the score for the item's scale, known as the item internal consistency.

The use of each item to score only one scale assumes substantial item discriminant validity. In other words, each item clearly measures one health concept more than other health concepts. Empirical methods are used to test scaling assumptions. When the assumptions are met, items in the same scale can be scored without standardization and can be summed with good results (Ware, 1993).

Ware (1993) evaluated item internal consistency of the SF-36™ items in the Medical Outcomes study by examining the correlation between each item and the item's hypothesized scale. Internal consistency correlations above 0.40 were deemed acceptable for the SF-36™ scales (Ware).

With extremely short scales (i.e., 2 item scales used in the SF-36™), investigators must "correct" estimates of internal consistency for the "overlap" between each item and the item's scale score. Overlap correction or adjustment is accomplished by estimating the correlation between the item and the sum of all other items in the scale (Ware, 1993).

Tests of item discriminant validity focus on the integrity of the hypothesized item groupings in relation to the health concepts hypothesized. When the correlation

between an SF-36™ item (i.e., Item 9a. "Feel full of pep") and the item's hypothesized scale (Vitality) is notably higher than correlations with other SF-36™ scales (i.e., Social Functioning), inclusion in the hypothesized item grouping is supported (Ware, 1993).

Table 6 provides a summary of item means, standard deviations, and correlations between each item and the eight SF-36™ subscales (Ware). Examination of Table 6 reveals that, within each scale, correlations between items and corresponding hypothesized scales were about equal and with only once exception exceeded the 0.40 standard for internal consistency (GH scale, .38). In addition, tests of item discriminant validity exceeded the necessary standards for all items in each of the SF-36™ subscales in tests performed for the MOS sample. Tests of item discriminant validity involve a comparison between the correlation for each item and the item's hypothesized scale versus other correlations of SF-36™ scales in the same row in Table 6. For example, to test discriminant validity for item 3a. in the Physical Functioning (PF) scale, compare the item-scale correlation of 0.62 (corrected for overlap) with other correlations in the same row, such as 0.51 for Role-Physical (RP), and 0.42 for Bodily Pain (BP), 0.46 for General Health (GH) (see Table 6). The PF item-scale correlation exceeds each other SF-36™ scale (RP, BP, GH, VT, SF, FE, and MH) (Ware, 1993).

Table 6.

Item Means, Standard Deviations, and Correlations^a with SF-36™ Scales: Results from the Medical Outcomes Study
(N=3,445).

	Item ^b	MEAN	SD	PF	RP	BP	GH	VT	SF	RE	MH
Physical Functioning (PF)	3a	1.82	.79	.62*	.51	.42	.46	.39	.24	.16	.10
	3b	2.48	.71	.78*	.54	.51	.45	.45	.40	.23	.16
	3c	2.56	.66	.76*	.52	.50	.41	.40	.40	.22	.14
	3d	2.25	.77	.78*	.50	.44	.46	.43	.33	.21	.13
	3e	2.66	.60	.78*	.45	.41	.39	.38	.35	.20	.12
	3f	2.44	.70	.71*	.50	.50	.40	.38	.32	.19	.12
	3g	2.28	.81	.78*	.51	.46	.46	.43	.34	.20	.13
	3h	2.52	.74	.80*	.48	.45	.43	.42	.37	.20	.14
	3i	2.76	.55	.72*	.42	.42	.36	.35	.37	.18	.14
	3j	2.88	.39	.49*	.31	.34	.27	.27	.35	.18	.14
Role-Physical (RP)	4a	1.62	.49	.51	.70*	.51	.42	.47	.46	.40	.27
	4b	1.46	.50	.44	.65*	.46	.39	.51	.39	.41	.28
	4c	1.63	.48	.58	.67*	.55	.42	.43	.41	.28	.20
	4d	1.57	.50	.49	.68*	.56	.41	.50	.45	.39	.32
Bodily Pain (BP)	7	4.31	1.30	.53	.54	.70*	.44	.46	.43	.27	.29
	8	4.38	1.40	.53	.61	.70*	.44	.48	.51	.33	.33
General Health (GH)	1	3.15	.92	.58	.49	.48	.63*	.52	.40	.28	.28
	11a	4.01	1.14	.22	.29	.30	.44*	.38	.36	.28	.35
	11b	3.12	1.24	.42	.37	.35	.65*	.44	.34	.24	.27
	11c	3.43	1.14	.26	.24	.20	.38*	.25	.16	.15	.19
	11d	3.03	1.26	.49	.45	.44	.72*	.52	.40	.28	.32
Vitality (VT)	9a	3.11	1.43	.45	.51	.42	.51	.75*	.46	.40	.44
	9e	3.43	1.35	.43	.49	.40	.48	.74*	.43	.37	.42
	9g	4.16	1.25	.42	.50	.48	.49	.69*	.54	.45	.55
	9i	3.99	1.22	.40	.46	.44	.47	.70*	.50	.43	.50
Social Functioning (SF)	6	4.18	1.05	.43	.51	.51	.42	.54	.74*	.52	.58
	10	4.27	1.03	.38	.46	.45	.42	.52	.74*	.51	.62
Role-Emotional (RE)	5a	1.73	.45	.20	.39	.27	.29	.41	.50	.70*	.54
	5b	1.60	.49	.22	.41	.28	.30	.45	.48	.73*	.56
	5c	1.74	.44	.23	.36	.28	.29	.40	.45	.63*	.50
Mental Health (MH)	9b	4.67	1.31	.18	.26	.29	.33	.43	.47	.47	.65*
	9c	5.34	1.05	.13	.27	.27	.28	.42	.58	.53	.73*
	9d	3.96	1.39	.11	.28	.30	.32	.50	.53	.53	.79*
Reported Health Transition (HT)	9f	4.77	1.20	.12	.27	.27	.32	.49	.59	.57	.81*
	9h	4.14	1.30	.15	.30	.30	.37	.53	.58	.54	.81*
	2	3.37	.92	.18	.17	.22	.22	.23	.24	.14	.19

Note. ^a refers to Item-total correlation corrected for overlap. Standard error = 0.02; ^b refers to SF-36™ Item numbers; Extracted from SF-36™ Health Survey Manual and Interpretation Guide (Ware, 1993, p. 5:4).

Examining the correlation between each item and the item's hypothesized scale tested item internal consistency of the SF-36™ items in this study. The standard of item

correlations above 0.40 for the SF-36™ scales that Ware (1993) used in the Medical Outcome Study was adopted for this study as well. Tests of item discriminant validity were also considered in this study. Table 7 provides a summary of item means, standard deviations, and correlations between each item and the eight SF-36™ subscales that were obtained in this study.

Results from SF-36™ tests of scaling assumptions strongly support the use of summated ratings in computing scores for SF-36™ scales. Ware and colleagues from *The Health Institute at New England Medical Center* developed computer-generated software to compute corrections and other analysis for scoring the SF-36™.

SF-36™ transformed scores range from "0" to "100", with "0" indicating the poorest health, and "100" representing the best health. Scoring is accomplished by manual data item entry into a computerized software program developed by Ware (1998b). Details of the scoring information for each of the items used in the eight SF-36™ health scales and the reported health transition item are provided in Appendix I. All SF-36™ scoring in this study was accomplished by computer-generated software developed by Ware and distributed through Quality Metrics, which is available at <http://www.sf-36.com>.

Analysis of eight distinct subscales requires highly sophisticated statistical analysis. Fortunately, recent advances in the understanding of the actual structure of

Table 7.

Item Means, Standard Deviations, and Correlations with
SF-36™ Scales: Results from DHEC HHCS Study (n=23)

	Item ^b	MEAN	SD	PF	RP	BP	GH	VT	SF	RE	MH
Physical Functioning (PF)	3a	1.09	.42	.59*	.22	-.23	.36	.10	.08	-.09	.11
	3b	1.09	.29	.64*	.44*	-.16	.20	.02	.21	-.00	.05
	3c	1.22	.42	.91*	.54*	-.04	.42*	.31	.48*	.35	.25
	3d	1.13	.46	.67*	.38	-.21	.29	.06	.17	-.04	.08
	3e	1.26	.54	.66*	.18	.07	.39	.41*	.50*	.24	.39
	3f	1.35	.65	.88*	.51*	.11	.41	.51*	.58*	.46*	.29
	3g	1.13	.46	.74*	.45*	-.21	.33	.14	.12	.03	.06
	3h	1.09	.29	.75*	.56*	-.16	.26	.15	.12	.11	.02
	3i	1.22	.52	.69*	.58*	.06	.20	.25	.39	.42*	.13
	3j	1.61	.66	.54*	.23	.16	.11	.53*	.38	.34	.25
Role-Physical (RP)	4a	1.26	.45	.45*	.85*	-.03	-.06	-.15	.29	.14	-.10
	4b	1.17	.39	.69*	.74*	-.18	.20	.22	.36	.34	-.03
	4c	1.13	.34	.37	.91*	-.14	-.24	-.17	.16	.34	-.30
	4d	1.13	.34	.37	.91*	-.14	-.24	-.17	.16	.34	-.30
Bodily Pain (BP)	7	4.04	.82	.10	.18	-.95*	-.13	.10	-.40	.10	-.46*
	8	3.09	1.00	-.03	.20	-.95*	-.36	-.27	-.54*	.03	-.61*
General Health (GH)	1	4.22	.74	-.54*	-.17	-.02	-.60*	-.42*	-.31	.02	-.29
	11a	2.26	1.21	-.04	-.21	.41	.57*	-.03	.43*	.33	.61*
	11b	3.87	1.18	-.18	.15	.15	-.49*	-.37	.04	.36	-.08
	11c	2.43	.95	.08	-.07	.25	.52*	.08	.24	.24	.61*
	11d	4.57	.79	-.52*	-.09	.00	-.53*	-.49*	-.37	-.42*	-.35
Vitality (VT)	9a	5.52	.79	-.46*	.03	-.39	-.66*	-.55*	-.57*	-.14	-.52*
	9e	5.39	.84	-.59*	-.22	-.23	-.59*	-.61*	-.60*	-.19	-.35
	9g	3.30	1.58	.14	-.20	-.09	.14	.86*	-.01	.26	.08
	9i	2.87	1.55	.29	-.09	-.06	.26	.91*	.25	.28	.19
Social Functioning (SF)	6	3.17	1.07	-.30	-.19	-.46*	-.26	-.18	-.84*	-.32	-.30
	10	2.35	1.19	.53*	.31	.35	.57*	.45*	.85*	.37	.47*
Role-Emotional (RE)	5a	1.52	.51	.24	.32	.00	.17	.17	.38	.91*	.39
	5b	1.43	.51	.42*	.28	-.21	.35	.42*	.31	.85*	.27
	5c	1.57	.51	.15	.27	.11	.04	.21	.37	.88*	.17
Mental Health (MH)	9b	4.26	1.42	.27	-.05	.53*	.57*	.25	.35	.33	.79*
	9c	4.57	1.41	.23	-.18	.58*	.76*	.23	.51*	.27	.92*
	9d	3.83	1.47	-.36	.07	-.36	-.65*	-.26	-.52*	-.23	-.77*
	9f	4.52	1.27	-.11	-.48*	.33	.53*	.38	.13	.18	.74*
	9h	3.70	1.43	-.25	.05	-.51*	-.61*	-.33	-.62*	-.39	-.81*
Reported Health Transition (HT)	2	4.09	.85	-.28	.03	-.46*	-.29	-.21	-.31	-.16	-.60*

Note. ^b refers to item numbers that correspond to SF-36™;
Extracted from SF-36™ Health Survey Manual and
Interpretation Guide (Ware, 1993, p. 5:4).

health have resulted in a breakthrough in measurement strategies (Ware, 1994). After several years of evaluating the factor structure of the SF-36™ among clients with various chronic conditions and among "well" general populations in the U.S. and other countries, Ware discovered that physical and mental factors clearly account for the vast majority of the variance in SF-36™ scales across populations. From 80 to 85% of the reliable variance in the eight SF-36™ scales are accounted for by physical and mental components of health. Standardized scoring of measures of physical and mental factors provides a useful option for scoring SF-36™ data (Ware). Psychometrically-based summary measures can decrease the number of statistical comparisons required in analyzing SF-36™ data from eight to two without substantial loss of information (Ware). Ware referred to SF-36™ Physical Component Summary (PCS) and Mental Component Summary (MCS) measures as "component" measures because PCS and MCS measures were derived and scored through a factor analytic method known as principal components analysis.

Figure 3 shows the measurement model used to construct the SF-36™ multi-item scales and summary measures. The model consists of three distinct levels: 1) Items, 2) Scales that aggregate items, and 3) Summary measures that aggregate scales. All but one of the 36 items (Question 2, self-reported health transition) are used to score the eight SF-36™ subscales (Ware, 1994, p. 3:2).

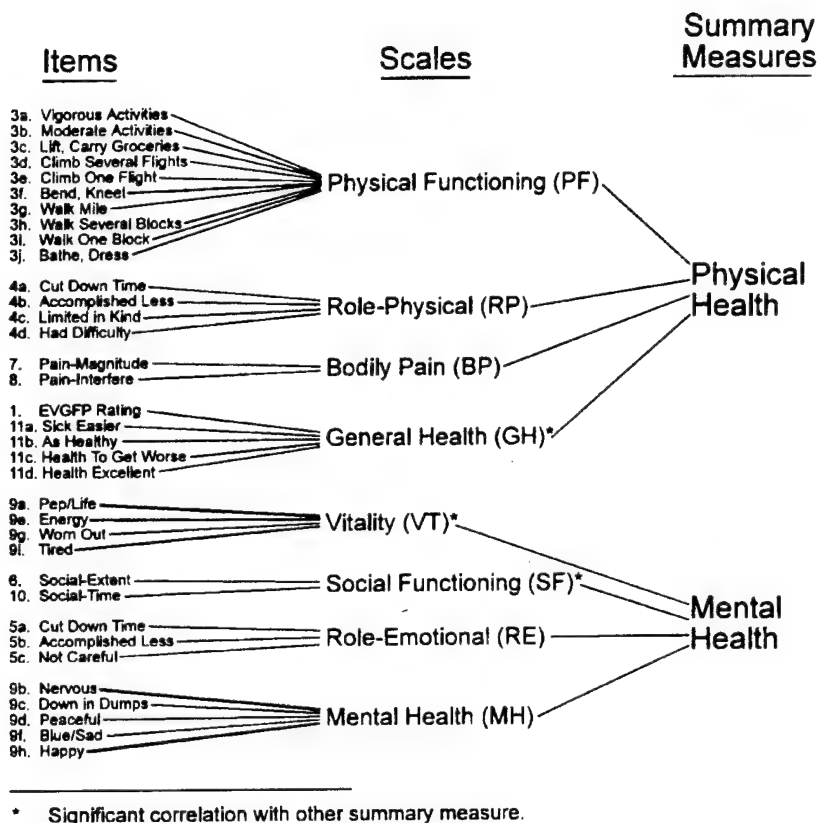


Figure 3. SF-36™ Items, Sub-Scales, & PCS and MCS Summary Measures (Ware, 1994, p. 3:1)

Others have examined the idea of using a summary measure, or utility index, which is based on a simple summation of the eight SF-36™ subscales (Katz, Larson, Phillips, Fossel, & Liang, 1992; Ware, 1993, 1994). However, Ware and Katz et al. do not recommend using a utility index because the utility index arrives at a single summary score at the expense of sensitivity and specificity to the physical versus mental components of health status.

Using PCS and MCS summary measures is useful for the

following reasons. First, PCS and MCS summary scales allow the investigator to distinguish physical from mental health outcomes. In addition, using PCS and MCS summary scales allows the investigator to streamline the data analysis process by reducing the number of required statistical comparisons from eight to two with no appreciable loss of information, a real boon for this study. For the purposes of this study, quality of life is operationally defined as the PCS and MCS summary measures, which are derived from the eight distinct health measures obtained by the SF-36™ Health Survey (Ware, 1993, 1994). This study utilized the eight subscales contained within the SF-36™ to determine the PCS and MCS summary measures, which in turn determine the physical and mental well-being (quality of life) among elderly CHF clients who were receiving home health services from DHEC HHCS at the time of this study.

Case Manager Demographics

Nurse case managers are responsible for providing high quality and cost-effective case management to clients. Certain characteristics specific to each case manager such as gender, age, experience, education, understanding of the case management role, length of employment, and employment status may influence the case manager's performance. A set of demographic questions (Appendix C) provided a composite of information related to nurse case managers. Demographic data were used to describe the sample and to conduct appropriate post hoc analyses in subsequent chapters.

Client Demographics

Each client who elected to participate in this study brought a myriad of unique life circumstances and experiences to this study. Examination of basic client demographics such as age, gender, education level, and ethnic background was used to describe the subjects and provided essential insight into certain findings that emerged within the study.

Data Analysis

The various relationships among the variables of case management organizational structure, daily hassles, social support, and quality of life were examined using regression analysis. The patient SF-36™ Physical Component Summary (PCS) summary score and Mental Component Summary (MCS) summary score served as the dependent variables and factor scores of social support (SS), daily hassles (DH), and the nurse case management organizational structure dimensions for vertical participation (VP), horizontal participation (HP), and formalization (F) functioned as the independent variables. This relationship, which evaluates patient quality of life, is represented by the following equations:

Physical Component Summary:

$$PCS_i = \beta_0 + \beta_1 SS_i + \beta_2 DH_i + \beta_3 VP_i + \beta_4 HP_i + \beta_5 F_i + \Sigma_i$$

where:

PCS_i = physical component summary score for the
ith subunit

SS_i = standardized* social support score for the
ith subunit

DH_i = standardized* daily hassles score for the ith
subunit

VP_i = standardized* vertical participation
(structure factor 1) score for the ith
subunit

HP_i = standardized* horizontal participation
(structure factor 2) score for the ith
subunit

F_i = standardized* formalization (structure
factor 3) score for the ith subunit

*mean = 0, standard deviation = 1

Mental Component Summary:

$$MCS_i = \beta_0 + \beta_1 SS_i + \beta_2 DH_i + \beta_3 VP_i + \beta_4 HP_i + \beta_5 F_i + \Sigma_i$$

where:

MCS_i = mental component summary score for the
ith subunit

SS_i = standardized* social support score for the
ith subunit

DH_i = standardized* daily hassles score for the ith
subunit

VP_i = standardized* vertical participation
(structure factor 1) score for the ith
subunit

HP_i = standardized* horizontal participation
(structure factor 2) score for the ith
subunit

F_i = standardized* formalization (structure
factor 3) score for the ith subunit

*mean = 0, standard deviation = 1

The PCS and MCS equations investigated the individual contributions of each of the variables to the two health components, which comprise patient quality of life. Standardized scores were used to examine the difference in range among the various variables. Value determinations can be made based upon the research variable that shows the greatest impact on the two major components of patient quality of life.

Data analysis also included descriptive statistics of the study sample and a summary of the results for each of the instruments used in the study. The fundamental research question was addressed using the previously described multiple regression analysis technique.

Ethical Implications

This study complied with the College of Nursing and University of South Carolina Ethics Committee procedures, as well as the procedures required by the state of South Carolina, Department of Health and Environmental Control (DHEC) standards for human research. Protection of human rights was paramount in this study. Research subjects and nurse case managers were matched by means of a numerical coding sequence of the surveys to ensure accurate and appropriate measure of nursing outcomes. Safeguards to protect patient information were implemented and patient and case manager anonymity and confidentiality was assured throughout the study. All investigational materials were secured and locked in the office of the investigator.

Participating DHEC Home Health District directors and program nurse specialists received a copy of the research proposal well in advance of the study. All research activities were coordinated through the appropriate Home Health District directors and/or program nurse specialists, based on the preference of the district. Qualified case managers were recruited on a voluntary basis. Patient participation was based on the recommendations of case managers, the Home Health District director, and/or the district program nurse specialists. Participants (patients and case managers) received full disclosure of the essential elements of the study and were allowed to withdraw at any time during the study. The population of interest in this study was primarily comprised of older elderly patients with CHF, who were receiving home health services from South Carolina DHEC HHCS. Safeguarding the rights of the participants was central to the study design implementation. At no time, did participation in the study delay, compromise, or impinge on the provision of quality patient care to this vulnerable population.

Study Limitations

This study was designed to examine many relationships simultaneously. Since descriptive correlational designs make no attempt to control or manipulate the situation, the potential for inclusion of extraneous variables was great (Burns & Grove, 1997).

Since the sampling plan included non-random sampling,

the possibility of sample bias existed on many levels. Sample selection bias posed a potential threat to the study's internal validity (Burns & Grove, 1997). In addition, if a homogeneous sample was selected, the resulting scores obtained may lack the sufficient wide range of variance necessary for linear relationships to be detected. A small sample size also potentially limits the ability to detect linear relationships (Burns & Grove).

Regression analysis and analysis of variance (ANOVA) may not provide a clear picture of the actual dynamics in the situation. A number of variables may be linked through weak correlations, which may go undetected, especially if the measurements are not powerful enough to detect fine discriminations (Burns & Grove, 1997). The possibility of spurious results cannot be ruled out when findings are based on probability (Daniel, 1995).

The use of a non-random sample also posed a threat to external validity (Burns & Grove, 1997). Since this study used a convenience sample, findings cannot be generalized. Findings are limited to participating subjects.

Summary

Managed care is forcing health care organizations to cut costs and services that cannot demonstrate value to customers. To ensure viability, nurses must articulate the value of case management in home health. This descriptive correlational study determines the value of nurse case management by examining the relationship between daily

hassles, social support, and case management organizational structure and the subsequent impact on patient care outcomes, specifically, quality of life among elderly home health clients with CHF.

Nurse case management researchers face critical challenges as a demand for information to justify the use of case management systems grows. A knowledge gap exists related to value determination of nurse case management and selected patient outcomes in home health. This study, based on Neuman's Systems Model (1995), used the VIM model to illustrate the role of social support and case management organizational structure, in mediating daily hassles that occur within the context of each CHF client's life and articulate the value of case management in home health.

Chapter V

RESULTS

This chapter contains details of the findings related to value determination of nurse case management in home health care among elderly CHF clients receiving DHEC home health services. The purpose of this chapter is to present the analysis of data relevant to this study. This chapter is organized into several distinct sections to facilitate the presentation and discussion of the findings. The first section provides information related to the data collection process and an overview of the findings related to the study population. The second section provides descriptive analysis of the nurse case manager and patient demographic variables. Section three provides an analysis of the research variables. The fourth section consists of a presentation of the regression analysis, which addresses the research question.

Data Collection and Patient Population

Planning is considered a fundamental function in managing a wide variety of activities (Rakich et al., 1992) including nursing research. The great American poet, Frost, understood the importance of planning and decision making. In Frost's (1969) epic poem, *The Road Not Taken*,

Frost stood at a fork in the road, undecided upon which path to take. Finally, Frost chose the one he believed was less frequented. As Frost recounts, "Two roads diverged in a wood, and I - I took the one less traveled by, And that has made all the difference" (p. 223). Frost chose a divergent road, which he believed was the right road for him, and the *only* road he could have taken.

Likewise, this study presented the investigator with many choices throughout all phases of research planning, study design, data collection, and data analysis. Throughout this study, the investigator, like Frost, elected to choose a less traveled path, and that has made all the difference.

According to the research plan, the population of interest in this study was comprised of elderly clients, age 65 and older, with a diagnosis of CHF who were receiving DHEC home health services. The rationale for the population parameters for this study is well supported in nursing literature. CHF is frequently described as a lethal, debilitating, and chronic disease typically and increasingly found in elderly populations (Jaarsma, Saad, Halfens, & Dracup, 1997; Kegel, 1995; Lasater, 1996; Moulton, McGrane, Beck, Holland, & Christopher, 1998; Wolinsky, Smith, Stump, Overhage, & Lubitz, 1997). The typical CHF patient is an elderly person who lives alone or with an elderly spouse, who often has significant health problems (Jaarsma, Halfens, & Saad, 1996).

Initial examination of the patient surveys revealed some interesting findings. First, the case managers distributed, completed, and returned surveys for clients that did not meet the defined age criteria of 65 and older. Four of the 23 patients (17%) were less than 65 years of age. However, when the sample population was compared to available South Carolina statistics, the sample population was representative of CHF clients in South Carolina.

Available South Carolina data included a description of the number of inpatient discharges from general hospitals by primary diagnosis of CHF in 1995 (SCSBCB, 1997). Hospital discharge data provides key tangential information related to CHF patients who are receiving home care, because over half of patients discharged from acute care facilities receive home care services (NAHC, 1999). The age distribution of South Carolina patients discharged from acute care facilities should be fairly representative of the age distribution of clients with CHF who are receiving home care in South Carolina. Table 8 provides a comparison of patient sample age distribution to the available South Carolina data.

On another front, DHEC HHCS participation in the research study proved to be particularly problematic. Despite early and detailed planning, coordination, and communication, the DHEC HHCS District with the largest potential CHF patient population (Richland and Lexington counties) was unable to participate in the study.

Table 8.

Comparison of Age Distribution of Study Participants with
Available South Carolina Data on CHF Patients

South Carolina	(n=11,396)	
Ages:	Number	Percent
< 15	30	0.2
15-44	445	3.9
45-64	2679	23.5
65 +	8242	72.3

Research Sample	(n=23)	
Ages:	Number	Percent
< 15	0	0
15-44	1	4.3
45-64	3	13
65 +	19	82.6

Note. Source: number of inpatient discharges and hospitalization rate per 100,000 population of South Carolina residents from general hospitals by primary diagnosis & age in 1995. Number of CHF patients all ages (n=11,396). (SCSBCB, 1997, p. 249).

Consequently, the entire state of South Carolina DHEC HHCS was canvassed, in search of Districts that were willing to participate. The Program Nurse Specialists (PNS's) and District Directors in Appalachia III, Edisto, and Waccamaw Districts were extremely helpful and enthusiastic. Eighty research packets were distributed among three DHEC HHCS Districts, based upon the PNS's and/or district director's predicted number of case managers and clients. A total of 23 completed research packets (29%) were returned from three different districts, Appalachia III, Edisto, and

Waccamaw. The number of complete research packets returned (23) was much less than sample size projected in the research plan (60).

The median age of the sample was 72 years, which suggests the sample is principally comprised of elderly CHF clients, which is consistent with the original study design. Since the sample size for returned surveys is small (23), but clearly representative of the general population of CHF clients who reside in South Carolina, all clients who elected to participate in the study (23) were included in the data analysis of this study. Incorporating all CHF clients, regardless of age, into the study adds to the breadth of the study and provides a more accurate portrayal of CHF clients who receive DHEC HHCS.

Examination of the case manager surveys revealed that five of the nurse case managers participated more than once in the study. According to the study design, nurse case managers were allowed to participate more than once. However, to avoid introducing over sampling bias into the study, nurse case manager demographic data were included only once for each nurse. Identification of duplicate nurse case manager demographic and organizational structure data was accomplished as follows. First, details of the demographic information were compared for similarity. If the surveys revealed identical demographic details, then the surveys were grossly examined for handwriting style and other similarities such as ink color. Case manager surveys

with identical demographic profiles and uniform handwriting were attributed to the same case manager. Each case manager (15) was represented only once.

Case manager responses on the Alexander Structure Instrument (1986) were also interesting. Three of the five nurses who participated more than once provided different responses on the Alexander Structure Instrument, which changed the overall scores obtained on the tri-dimensions of the instrument. The remaining two case managers provided consistent responses. Therefore, the nurses who provided consistent responses were counted only once to avoid over sampling bias. The three case managers that provided inconsistent responses on the Alexander Structure Instrument were included more than once. A total of 18 nurse case managers were included in the descriptive analysis of the Alexander Structure Instrument. However, all 23 structure instruments were included in the final regression models.

Nurse Case Manager and Patient Demographics

Nurse case managers and CHF clients from across the state of South Carolina participated in this study. This study represents a wide variety of nurse case managers and patients from varying backgrounds and experiences. Details of the nurse case manager and patient demographic survey information are reported in two distinct segments.

Nurse Case Manager Demographic Survey

A total of 15 nurse case managers across the state of

South Carolina participated in this study. Nurses from three separate DHEC HHCS Districts, which included five different DHEC HHCS sites from four different counties in South Carolina were represented. The geographical location of the case managers ranged from the Upstate in the Appalachia III District, to the Midlands, which includes the Edisto District, and the Coastal region, included in the Waccamaw District. A summary of the geographical distribution of the case managers is provided in Table 9.

Table 9.

Geographical Distribution of Nurse Case Managers

Name of Agency	District	County	Nurses	Percent
Bamberg	Edisto	Bamberg	1	7%
Holly Hill	Edisto	Orangeburg	5	33%
Orangeburg	Edisto	Orangeburg	5	33%
Conway	Waccamaw	Horry	1	7%
Union	Appalachia III	Union	3	20%
Totals	3 Districts	4 Counties	15 Nurses	100%

All of the nurse case managers (15) who participated in the study were female. Based on the sample median scores, the nurses who participated in this study were generally older (40 years), more experienced (13 years) with basic entry level (Associate Degree) educational preparation. The nurses were relatively stable in terms of tenure with

DHEC (7 years), and the nurses had substantive experience in home health nursing (5 years), based on sample median scores. Over half of the nurses were full-time employees (60%) and the remainder (40%) were part-time employees. A majority of the nurses expressed a very clear (53%) or clear (47%) understanding of their role as case manager. Table 10 provides a summary of the nurse case manager demographic characteristics such as age, years of professional practice, years of experience with DHEC HHCS, and a summary of the sample's home health experience. Table 11 provides a summary of the nurse case manager level of education.

Table 10.

Summary of Nurse Case Manager Demographic Survey (n=15)

	Mean	Median	Std Dev	Mode	Range
Age (Years)	42.40	40	8.96	57	32-57
Years of Practice	13.87	13	8.60	3	3-35
DHEC Years	8.47	7	7.61	5	1-30
Years Home Health Experience	8.13	5	7.70	5	1-30

Note. Years of Practice=Years of nursing practice; DHEC Years=Number of years employed by DHEC; Years Home Health Experience=Number of years employed in home health setting regardless of agency.

Table 11.

Summary of Nurse Case Manager Level of Education

Level of Education	Number of Nurses	Percent
(1) AD	9	60%
(2) Diploma	3	20%
(3) BSN	3	20%
(4) MS/MSN	0	0%
(5) Ph.D.	0	0%

Note. AD=Associate Degree in Nursing (2 year program), Diploma=3 year program, BSN=Bachelor of Science in Nursing (4 year program), MS/MSN=Master of Science or Master of Science in Nursing (Graduate Degree), Ph.D.=Doctoral Degree

Patient Demographic Survey

A total of 23 CHF patients across the state of South Carolina participated in this study. Clients from three separate DHEC HHCS Districts, which included five different DHEC HHCS sites from four different counties in South Carolina were represented. The geographical location of the patients mirrored the location of the case managers and ranged from the Upstate in the Appalachia III District, to the Midlands, which includes the Edisto District, and the coastal region, which includes the Waccamaw District. A summary of the geographical distribution of the clients is provided in Table 12.

The clients who participated in this study were predominantly elderly white female clients with less than an eighth grade education. Specifically, six of the

Table 12.

Geographical Distribution of Clients

Name of Agency	District	County	Clients	Percent
Bamberg	Edisto	Bamberg	2	9%
Holly Hill	Edisto	Orangeburg	6	26%
Orangeburg	Edisto	Orangeburg	6	26%
Conway	Waccamaw	Horry	2	9%
Union	Appalachia III	Union	7	30%
Totals	3 Districts	4 Counties	23 Clients	100%

clients (26%) were male and 17 (74%) were female. The average age of the clients' was 71 years old with a standard deviation of 10.28 years. The median age was 72 and the sample mode was 77 years. The youngest client in the sample was 41 years old and the oldest client was 85 years of age. Table 13 provides a summary of the educational level and ethnic background of the CHF clients.

Table 13.

Summary of CHF Client Level of Education and Ethnic Background

Level of Education	Number of Clients	Percent
(1) Less than 4th grade	3	13%
(2) 5th grade - 8th grade	9	39%
(3) 9th grade	3	13%
(4) 10th grade	2	9%
(5) 11th grade	1	4%
(6) 12th grade	4	17%
(7) 1 year college	0	0%
(8) 2 year college	1	4%
(9) 3 year college	0	0%
(10) 4 year college	0	0%
(11) Graduate School	0	0%
Ethnic Background		
Black	10	43%
White	13	57%
Hispanic	0	0%
Other	0	0%

Analysis of the Research Variables

This section provides an analysis of each of the research variables used in this study. Specifically, this section provides discussion of the findings of the Alexander (1986) Structure Instrument (Appendix D), the Daily Hassles scale (Lazarus & Folkman, 1989) (Appendix G), Social Support Outcome (Johnson & Maas, 1997) (Appendix E), and the SF-36™ Health Survey (Ware, 1998a) (Appendix H). Details of the survey and study findings are presented in four distinct segments.

Case Management Organizational Structure

Organization structure is characterized as either flexible or informal (organic) by high vertical and horizontal participation, and high formalization scores. High formalization scores indicate that few rules and regulations exist and are used in the organization. High vertical participation scores indicate a high degree of consultation among supervisors and subordinates concerning job-related tasks and decisions. High horizontal participation scores indicate a high degree of involvement with peers in decision making and in defining tasks.

In contrast, organization structure is considered inflexible and highly formal (mechanistic) by low vertical and horizontal participation, and low formalization scores. Low formalization scores indicate that numerous rules and regulations exist and are used in the organization. Low vertical participation scores indicate higher degrees of

autonomy among subordinates and a low degree of interaction with supervisors concerning job-related tasks and decisions. Low horizontal participation scores also indicate higher degrees of autonomy and a low degree of involvement with peers in decision making and in defining tasks.

A summary of the overall DHEC HHCS sample scores obtained on the tri-dimensions of the Alexander (1986) Structure Instrument (Appendix D) is provided in Table 14.

Table 14.

Summary of DHEC HHCS Sample Scores on Alexander (1986)
Structure Instrument (n=18)

Scale	Instrument		South Carolina DHEC HHCS		
	Range	Range	Mean	Std Dev	
Vertical Participation	5-25	10-25	17.78	4.35	
Horizontal Participation	7-35	8-23	16.50	3.81	
Formalization	2-10	5-10	7.56	1.38	

Note. Values reflect omission of identical case manager responses; n=18 (see p. 122 for explanation)

The scores obtained in this study were not consistent with scores obtained in previous studies conducted in home health settings. Table 15 provides a comparison of mean scores and standard deviation obtained in Cumbey's (1995) study and this study. Reasons for the disparity in scores

Table 15.

Comparison of Cumbey's (1995) Study and DHEC HHCS Mean Scores and Standard Deviation on Alexander (1986) Structure Instrument

Home Care Setting	Vertical Participation	Horizontal Participation	Formalization
Cumbey (1995)*	17.17 (3.53)	23.80 (3.97)	4.67 (1.43)
DHEC HHCS **	17.78 (4.35)	16.50 (3.81)	7.56 (1.38)

Note. * refers to n=231, ** refers to n=18

are unclear. A detailed and empirically based examination of the potential causal factors exceeds the scope of this study. Nevertheless, some of the disparity *could* be attributed to 1) major changes in the home health care industry since 1995; 2) the high degree of autonomy that is required in today's home health organizations; 2) the age and/or professional maturity of the nurse case managers; and 3) a blatant disregard for the increasing number of rules and regulations governing home health care.

A complete summary of the DHEC HHCS District scores obtained on the tri-dimensions of the Alexander (1986) Structure Instrument (Appendix D) is provided in Table 16. In addition, a summary of the DHEC HHCS Site scores obtained on the tri-dimensions of the Alexander (1986) Structure Instrument (Appendix D) is provided in Table 17.

Table 16.

Summary of DHEC HHCS District Scores on the Alexander
Structure Instrument (1986) (n=18)

Scale	Instrument Range	South Carolina DHEC HHCS Districts		
		District #1	District #2	District #3
Vertical Participation	5-25	(n=13)	(n=3)	(n=2)
Range		14-25	10-23	13-14
Mean		19.00	15.33	13.50
Std Dev		3.58	6.81	0.71
Horizontal Participation	7-35			
Range		8-20	17-23	20
Mean		15.15	20.00	20.00
Std Dev		3.43	3.00	0
Formalization	2-10			
Range		6-10	5-8	6-8
Mean		7.92	6.33	7.00
Std Dev		2.26	1.53	1.41

Note. Values reflect omission of identical case manager responses; n=18
(see p. 122 for explanation)

Table 17.

Summary of DHEC HHCS Site Scores on the Alexander Structure
Instrument (1986) (n=18)

Scale	Instrument Range	South Carolina DHEC HHCS Sites				
		Site #1	Site #2	Site #3	Site #4	Site #5
VP	5-25	(n=6)	(n=5)	(n=2)	(n=3)	(n=2)
Range		15-24	14-25	18-19	10-23	13-14
Mean		20.17	17.80	18.50	15.33	13.50
Std Dev		3.43	4.44	0.71	6.81	0.71
HP	7-35					
Range		9-18	8-20	17-19	17-23	20
Mean		14.83	14.4	18.00	20.00	20.00
Std Dev		3.01	4.28	1.41	3.00	0
F	2-10					
Range		6-10	6-9	7-8	5-8	6-8
Mean		8.33	7.60	7.50	6.33	7.00
Std Dev		1.51	1.14	0.71	1.53	1.41

Note. Values reflect omission of identical case manager responses; n=18
(see p. 122 for explanation)

Daily Hassles

Daily hassles or irritants are described in terms of the severity of proximal events, as well as the frequency of the hassles (Lazarus & Folkman, 1989). Daily hassles are characterized as causing a wide range of difficulties for clients, ranging from "no problem", to an "extremely severe" problem. High severity scores indicate that the identified daily hassles are extremely problematic for the client. High frequency scores indicate the client is plagued by numerous stressful proximal events (daily hassles). A summary of severity and frequency scores obtained on the Daily Hassles Scale (Appendix G) is provided in Table 18.

Table 18.

Summary of SC DHEC CHF Client Severity and Frequency Scores on the Daily Hassles Scale

Scale	Instrument Range	DHEC HHCS CHF Clients			
		Range	Mean	Median	Std Dev
Severity	0-351	0-168	41.17	21	42.33
Frequency	0-117	0-72	24.09	15	20.47

The study participants reported a fairly low number of overall daily hassles with a median frequency score of 15 out of a possible 117. The overall severity of the reported daily hassles was quite low as well, with a severity median score of 21 out of a possible 168 (highest

possible severity). All study participants (n=23) rated 21 out of 117 (18%) of the items as "0" (not a problem), 90% or more of subjects rated 48 out of 117 (41%) of the items as "0" (not a problem), 50% or more of subjects rated 110 out of 117 (94%) of items as "0" (not a problem).

The most frequently reported daily hassles (top five) based on daily hassles that were rated by clients as "extremely severe" are summarized in Table 19. The most frequently reported daily hassles (top five), hassles that were rated either "extremely severe", "moderately severe", or "somewhat severe", are summarized in Table 20.

Table 19.

Summary of the Top Five Items Rated "Extremely Severe" on the Daily Hassles Scale

Top Five Daily Hassles	Percent of Sample	Question Number	Question (Verbatim)
1	30%	48	Physical illness
2	26%	94	Not enough personal energy
3	22%	67	Declining physical abilities
4	17%	1	Misplacing or losing things
4	17%	25	Trouble relaxing
4	17%	45	Financial Security
4	17%	56	Concerns about health in general
5	13%	9	Not enough money for housing
5	13%	40	Having to wait
5	13%	43	Not enough money for health care
5	13%	50	Concerns about medical treatment
5	13%	91	Concerns about weight

Table 20.

Summary of the Top Five Items Rated "Extremely Severe",
"Moderately Severe", or "Somewhat Severe" on the Daily
Hassles Scale

Top Five Daily Hassles	Percent of Sample	Question Number	Question (Verbatim)
1	78%	48	Physical illness
1	78%	56	Concerns about health in general
1	78%	67	Declining physical abilities
1	78%	94	Not enough personal energy
2	57%	12	Concerns about money for emergencies
2	57%	25	Trouble relaxing
2	57%	50	Concerns about medical treatment
3	48%	5	Troubling thoughts about your future
3	48%	43	Not enough money for health care
4	43%	1	Misplacing or losing things
4	43%	6	Thoughts about death
4	43%	7	Health of a family member
4	43%	26	Trouble making decisions
4	43%	42	Being lonely
4	43%	72	Not getting enough sleep
4	43%	77	Difficulties seeing or hearing
4	43%	91	Concerns about weight
5	39%	23	Planning meals
5	39%	29	Home maintenance (inside)
5	39%	45	Financial security
5	39%	59	Preparing meals
5	39%	71	Not getting enough rest

Social Support Outcome

Social support indicates the degree of perceived availability and actual provision of reliable assistance from other persons (Johnson & Maas, 1997). High social support scores typically characterize perceptions of high degrees of available and actual assistance from other persons. The case managers who participated in this study rated the degree of client social support as limited for over half of the sample population (57%). Based on the sample median score(29), the overall perceived degree of social support in this sample is relatively low. A summary of the scores obtained on the Social Support Outcome (Johnson & Maas) (Appendix E) instrument is illustrated in Table 21.

Table 21.

Summary of Scores on Social Support Outcome (n=23)

Scale	Instrument Range	DHEC HHCS CHF Clients			
		Range	Mean	Median	Std Dev
Degree of Support	13-65	24-53	31.00	29	7.61
	# Responses	Percent			
None	0	0%			
Limited	159	57%			
Moderate	83	30%			
Substantial	29	10%			
Extensive	6	2%			
Total Responses	277	100%			

The most frequently reported deficits among the social support indicators (top five) that were rated by the case

managers as "limited" are illustrated in Table 22. Nurse

Table 22.

Summary of the Top Five Indicators of Social Support
Deficits Among DHEC HHCS CHF Clients on the Social Support
Outcome Instrument (Johnson & Maas, 1997)

Top Five Social Support Deficits	Percent of Sample	Question Number	Question (Verbatim)
1	91%	1	Reports of money provided by others
2	70%	12	Reports of help offered by others
3	65%	11	Reports of stable social network
4	61%	10	Reports of adequate supportive social contacts
5	57%	3	Reports of labor provided by others
5	57%	4	Reports of information provided by others
5	57%	6	Reports of confidant relationship(s)
5	57%	9	Reports of assistive social network

case managers perceived that most clients (61%) were willing to call on others for help. Nevertheless, the single social support indicator that demonstrated the most varied case manager response to perceived availability of support involved reports of persons who can provide help when needed. A summary of the responses to the various social support indicators is provided in Table 23.

Table 23.

Summary of Case Manager Responses on the Social Support

Outcome Instrument

Social Support Indicator	None	Limited	Moderate	Substantial	Extensive
Money	0%	91%	9%	0%	0%
Time	0%	52%	30%	13%	4%
Labor	0%	57%	30%	9%	4%
Information	0%	57%	30%	9%	4%
Emotional Assistance	0%	52%	26%	17%	4%
Confidant relationship(s)	0%	57%	30%	9%	4%
Persons who can help when needed	0%	48%	30%	17%	4%
Willingness to call on others for help	0%	26%	61%	13%	0%
Assistive social network	0%	57%	43%	0%	0%
Adequate supportive social contacts	0%	61%	30%	9%	0%
Stable social network	0%	65%	22%	13%	0%
Help offered by others	0%	70%	17%	13%	0%
Other (specify)	0%	0%	0%	100%	0%

Note. One case manager identified a substantial amount of "other" client support through family and church members

Quality of Life

Quality of life is conceptualized as an individual's level of functioning and well-being (Ware, 1993). Quality of life is operationalized by using the Physical Component Summary (PCS) and Mental Component Summary (MCS) measures derived from the eight health concepts which comprise the SF-36™ Health Survey (Appendix H). High PCS scores indicate a high degree of physical functioning, high degree role-physical functioning, bodily pain that does not interfere with functioning, and high general health perceptions. High MCS scores indicate a high degree of

vitality, high level social functioning, stable role-emotional functioning, and highly functioning mental health. A summary of the client scores on the eight health concepts is provided in Table 24.

Table 24.

Summary of Client Scores Obtained on the Eight Health Concepts of the SF-36™ Health Survey

Scale	Raw Score Range	Transformed Scale Range	Mean	Std Dev	Minimum	Maximum
PF	10-30	0-100	10.78	16.43	0	55
RP	4-8	0-100	17.39	32.36	0	100
BP	2-12	0-100	41.39	16.06	21	84
GH	5-25	0-100	25.91	15.33	0	63
VIT	4-24	0-100	26.30	18.48	0	70
SF	2-10	0-100	40.48	24.60	0	100
RE	3-6	0-100	50.69	44.83	0	100
MH	5-30	0-100	59.74	23.11	12	92

Note. Scoring of the SF-36™ subscales involves transforming each raw scale score into a 0 to 100 scale (see Appendix I for scoring details) (Ware, 1993).

A summary and brief explanation of the client PCS and MCS scores is provided in Table 25. Since PCS and MCS scores use norm-based scoring, client scores may fall above or below the general population score (Mean=50) with a standard deviation of 10. Presenting findings using norm-based values facilitates comparison of patient scores with

Table 25.

Summary of Physical Component Summary (PCS) and Mental
Component Summary (MCS) Scores obtained on the SF-36™
Health Survey

Scale	Standardized Scale	DHEC HHCS CHF Clients			
		Range	Mean	Median	Std Dev
PCS	50-10	12-36	22.39	22	5.98
MCS	50-10	29-68	44.57	42	11.85

Note. PCS and MCS scores are based on a standardized "50-10" scale. The mean score for the general U.S. population for PCS and MCS is 50, with a standard deviation of 10 (Ware, 1994).

the general U.S. population, as well as the amount of deviation from the population mean.

Based on the sample median PCS score (22) and median MCS score (42), the CHF clients served by DHEC HHCS services that participated in this study are well below the general U.S. population mean score for PCS (50) and MCS (50). Based on the median scores obtained in this study, the quality of life among the sample population can be characterized as abysmal. Rationale for the bleak quality of life scores is discussed in the next section.

Presentation of Regression Analysis

The strength of the relationships among the variables of case management organizational structure, daily hassles, social support, and quality of life were examined using two separate regression models. Two distinct regression models were used, because quality of life (client level of functioning and well-being) consists of two distinctly different, yet interrelated health components. In this study, client quality of life was measured using the norm-based Physical Component Summary (PCS) and the Mental Component Summary (MCS), which are derived from the eight SF-36™ subscales. Ultimately, client quality of life was determined by examining the individual contributions of social support, daily hassles, and the tri-dimensions of case management organizational structure including vertical participation, horizontal participation, and formalization and the impact on client PCS and MCS scores. The value of case management in home health nursing was determined by identifying the research variable that had the greatest impact on client PCS and MCS scores. Standardized scores were used to examine the difference in range among the variables in each of the regression models.

Using separate multiple regression models, PCS and MCS scores were regressed on the linear combination of vertical participation, horizontal participation, formalization, daily hassles, and social support. The equation containing these five variables was not nonsignificant in the Physical

Component Summary model with $F(5,17) = 0.54$, $p < 0.75$, adjusted $R^2 = -0.12$. However, the equation containing the five predictor variables accounted for 48% of the variance in quality of life reflected in the Mental Component Summary model, $F(5,17) = 5.12$, $p < 0.005$.

Beta weights (standardized multiple regression coefficients) were reviewed to assess the relative importance of the five variables in the prediction of quality of life. Beta weights are presented in Table 26.

Table 26.

PCS and MCS Beta Weights Obtained in Multiple Regression Analyses Predicting Quality of Life

Predictor	PCS Beta Weights ^a		MCS Beta Weights ^a	
	Beta	p	Beta	p
1. Vertical Participation	-0.248	0.346	0.073	0.679
2. Horizontal Participation	-0.001	0.996	0.323	0.076
3. Formalization	-0.030	0.913	-0.570	0.006*
4. Daily Hassles	-0.307	0.220	-0.438	0.016*
5. Social Support	-0.128	0.623	0.223	0.214

Note. (N=23).

^a Beta weights are standardized multiple regression coefficients obtained when quality of life (PCS and MCS) were regressed on all five predictors.

Table 26 shows that only formalization and daily hassles displayed significant beta weights on the MCS score. Formalization demonstrated the somewhat larger beta

weight at -0.57 ($p < 0.005$), while the beta weight for daily hassles was -0.43 ($p < .005$). Both coefficients were in the predicted direction. The multiple regression models support two significant negative relationships. First, multiple regression analysis demonstrated a negative relationship between formalization and the mental health component of quality of life, as the number of rules and regulations increases (high formalization), the mental health component of the client's quality of life decreases. In addition, multiple regression analysis revealed a negative relationship between daily hassles and the mental health component of quality of life, as the severity of reported daily hassles increases, the mental health component of the client's quality of life decreases.

Chapter Summary

This chapter provided information related to the data collection process and an overview of the findings related to the study population. This chapter also presented a detailed descriptive and inferential analysis of the demographic and research variables in this study by using two multiple regression models. Wherever possible, the research instruments were examined for measurement reliability and validity.

Chapter VI

DISCUSSION

The final chapter is divided into three major sections: 1) interpretation of the findings, 2) implications for nursing, and 3) implications for further nursing research. The first section discusses value determination of nurse case management in home health nursing and the findings from the data analysis of the demographic and research variables presented in Chapter V.

Interpretation of the Findings

The purpose of this study, based on Neuman's (1995) Systems Model was to examine patient outcomes in the context of each patient's unique life circumstances. This study sought to determine the value of case management in home health care among elderly clients with CHF. Value determinations were achieved by examining the relationship between the severity of daily hassles; the tri-dimensions of case management organizational structure; the degree of social support received from family members and others; and the subsequent impact on patient care outcomes, such as quality of life. Client quality of life was asserted through subjective patient reports of physical and mental well-being.

According to Neuman's (1995) Systems Model, health is

reflected in the level of wellness (stability). When system needs are met, a state of optimal wellness ensues. Conversely, unmet needs decrease system (client) wellness (stability). In Neuman's Systems Model, disruptive forces exist in the environment. Disruptive forces have the capacity to threaten or destroy the system (client). Neuman refers to disruptive forces as stressors, which may have positive or negative outcomes.

By applying Neuman's (1995) Systems Model to this study, three distinct dimensions of case management structure could potentially impact patient quality of life. In addition, the presence or absence of social support may influence client quality of life. Finally, daily hassles expressed as major or minor subjective annoyances may impact client quality of life. The tri-dimensions of organizational structure, social support, and daily hassles are viewed as potential stressors and/or potential mitigators of system stressors in this study. Each of the variables exist in a dynamic open system, and each variable has the potential to impact patient quality of life, positively or negatively, in terms of physical and mental health components.

This study found that the tri-dimensions of case management organizational structure, client social support, and subjective reports of daily hassles had varying impacts on client *mental* health, or quality of life, but no impact on client *physical* health. Specifically, patient quality

of life in terms of client *physical* health was not impacted by the degree to which supervisors and subordinate case managers consult together concerning job-related tasks and decisions. Patient *physical* health was also not impacted by the degree to which individuals are involved with peers in decision making and in defining tasks. The extent to which rules, procedures, and instruction exist and are used within DHEC HHCS had no impact on the patient's *physical* health. In addition, the severity of client reports of daily hassles (minor to major annoyances) has no impact whatsoever on client *physical* well-being (quality of life).

However, this study supports the contention that high degrees of the case management organizational structural dimension of formalization (the extent to which rules, procedures, and instruction exist and are used) was the greatest predictor of client mental health (quality of life). Formalization demonstrated the largest of the beta weights at -0.57 ($p < 0.005$). According to this study, high degrees of rules, regulations, and required procedures and policies incorporated into the case management organizational structure, had a strong negative impact on client mental health (quality of life). In short, highly mechanistic structures led to decreased quality of life in terms of client *mental* health. In addition, the severity of reported daily hassles was another strong predictor of client *mental* health, or quality of life with beta weights of -0.43 ($p < 0.005$). This study found that subjective

reports of increased severity of daily hassles resulted in diminished quality of life in terms of mental health components.

Surprisingly, this study found that the amount of social support provided by family members and others had no impact on the client's *physical* or *mental* health, or quality of life. Varying degrees of social support had no impact on quality of life outcomes in this study.

Assigning value to nursing care activities presents a formidable challenge to nursing researchers, educators, administrators, and practitioners. Value determination of nursing care involves the comparison of divergent patient-care strategies or systems in relation to effectiveness in attaining outcomes (Arford & Allred, 1995). Clearly, the greatest value in terms of providing home health case management to this group of CHF clients can be achieved by providing home health services that seek to minimize client subjective daily hassles in the context of an organic and flexible organizational structure.

Implications for Nursing

One of the most memorable lines from the immortal classic *The Wizard of Oz* (Leroy & Fleming, 1939) occurred when Dorothy was preparing to return to Kansas. Suddenly, the balloon disembarked leaving Dorothy stranded somewhere over the rainbow. Glinda, the witch of the North, arrived to help Dorothy return home by encouraging Dorothy to examine the true meaning of her adventures in Oz. During a

crucial moment, which served as the climax in the film, the beloved Tin Woodman turned to the heroine and asked, "What have you learned, Dorothy?"

Reflection leads to greater understanding and richer, more meaningful experiences in life and in nursing research. Systematic reflection (evaluation) is an essential element in determining the effectiveness of case management (Flarey & Blancett, 1996).

The meager sample size and study design utilized in this study prohibits generalization of the findings to other populations. Nevertheless, this study provides sufficient impetus for home health nursing administrators, managers, educators, and case managers to thoughtfully reflect upon the findings of this study and the potential implications for home health nursing practice.

This study identified a relationship between the case management organizational structure of formalization, the severity of patient daily hassles and patient quality of life expressed through mental health. Both findings have potential implications for home health nursing practice. Home health administrators, managers and case managers should examine the top five items rated "Extremely Severe" on the Daily Hassles Survey, such as physical illness, insufficient personal energy, declining physical abilities, concerns about health in general, financial resources, having to wait, and concerns about weight. Nursing interventions should be designed to decrease the identified

daily hassles to the greatest extent possible. For example, nurse case managers should arrive on time and present themselves in a thoughtful, unhurried manner. In addition, critical pathways that address methods for client energy conservation, patient relaxation techniques, and the importance of daily weights for CHF clients should be implemented. Home health administrators, managers, and case managers should provide an ongoing assessment of the daily hassles items that posed varying levels of severity for clients in this study. For example, thoughts about death, loneliness, insufficient sleep and rest, and financial concerns should be discussed openly and regularly with clients, based upon the nursing assessment. Client instrumental activities of living should be evaluated periodically and not solely upon admission and discharge from home health. In short, case managers should seek to mitigate the negative consequences of daily hassles and improve client quality of life through responsive and empirically based home health services.

Nursing administrators, managers, and case managers must also be aware of the potential impact of nursing organizational structures, such as formalization on client quality of life, particularly the mental health component. This study found that high degrees of formalization led to diminished patient quality of life (mental health). Nursing leaders should be sensitive to the possibility that increased mechanistic and bureaucratic approaches to

patient care can lead to decreased quality of life, especially in terms of client mental health. Nurse case managers should be cautious when discussing or ventilating about federally mandated documentation, *proposed* changes to Medicare reimbursement, and other administrative issues that could have a negative impact on clients. Based on the findings of this study, case management interventions offer the greatest value to clients when organizational structure is flexible, organic, and designed to minimize the severity of client daily hassles. Without exception, nurse case management interventions should be thoughtfully planned, empirically based, and sensitive to the client's unique life circumstances.

Implications for Further Research

Multiple regression methods used in this study found that the Mental Component Summary (MCS) model contained two predictor variables, formalization and daily hassles, which accounted for 48% of the variance in quality of life reflected such that $F(5,17) = 5.12$, $p < 0.005$. Despite the small sample size, the MCS regression model yielded substantive results in this particular sample. However, 52% of the variance in quality of life (physical and mental health components) remains unidentified. Further nursing research is required to identify the remaining variable or combination of variables that contribute to and/or directly impact client quality of life. Identification of the variables attributed to client quality of life are

essential to establishing empirically based value determinations of case management in home health nursing.

Additional studies based on Neuman's (1995) Systems Model and the Value Indicator Model (VIM) could help to clarify the major determinants of client quality of life and help to articulate the value of nurse case management in home health care.

This study represents a modest attempt to bridge the gap that exists related to value determination of nurse case management and selected patient outcomes in the area of home health. In the face of an increased emphasis on value based decisions in home care (Hendricks & Baume, 1997; NAHC, 1997), nursing administrators and managers must act proactively to quantify the value of case management in home health care. Managers at all levels must demonstrate meaningful quality measures that establish a clear and immutable relationship between value driven case management interventions and favorable patient outcomes. Further nursing research using this or similar research designs with a significantly larger sample size would help to build on the existing body of knowledge and bridge the gap that remains in articulating the value of nurse case management in home health nursing.

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Appendix A

Letter of Introduction (for Patients)



University of South Carolina

College of Nursing
Columbia, S.C. 29208

VALUE DETERMINATION OF CASE MANAGEMENT IN HOME HEALTH NURSING

LETTER OF INTRODUCTION (FOR PATIENTS)

You have been selected to participate in a study I am conducting to assist nurses in determining the value of nurse case management in home health nursing. I am a graduate student at the University of South Carolina.

The results of the study will assist nursing supervisors and home health agency directors to design more appropriate methods for caring for patients who require home health services. Your participation in the study is completely voluntary and will involve completing three questionnaires: 1) Patient Demographic Survey; 2) The Daily Hassles Scale Test Booklet; and 3) The SF-36 Health Survey. The surveys will take approximately 25 minutes to complete. If you choose not to participate in the study, it will have no effect on your care.

The data obtained will be used in a confidential manner to complete the research. Do not put your name on the forms. None of your responses will be discussed with your nurses or physician. A summary of the results of this study will be provided to the South Carolina Department of Health and Environmental Control (DHEC) Home Health Care Services (HHCS) division and reported in professional papers. Data will be kept in my office under lock and key for the duration of the study.

Please retain this letter for future reference. If you have any questions concerning the study or for information concerning the results, you may contact me at:

326 Massingale Rd.
Columbia, S.C. 29210-4244
(803) 772-5613

Completion of the surveys will represent consent to participate in the study. Please seal the completed surveys in the enclosed envelope and return them to me whether or not you wish to complete the surveys. I appreciate your support in this important research.

Sincerely,

Mary Elizabeth Register, RN, BSN
Graduate Student

Appendix B

Letter of Introduction (for Case Managers)



University of South Carolina

College of Nursing
Columbia, S.C. 29208

VALUE DETERMINATION OF CASE MANAGEMENT IN HOME HEALTH NURSING

LETTER OF INTRODUCTION (FOR CASE MANAGERS)

You have been selected to participate in a study I am conducting to assist nurses in determining the value of nurse case management in home health nursing. I am a graduate student at the University of South Carolina.

The results of the study will assist nursing supervisors and home health agency directors to design more appropriate methods for caring for patients who require home health services. Your participation in the study is completely voluntary and will involve completing three questionnaires: 1) Case Manager Demographic Survey; 2) The Alexander Structure Instrument; and 3) The Social Support Outcome. The surveys will take approximately 15 minutes to complete. Participation in this study is voluntary. If you choose not to participate in the study, it will have no effect on you.

The data obtained will be used in a confidential manner to complete the research. Do not put your name on the forms. None of your responses will be discussed with your patients, peers, or supervisors. A summary of the results of this study will be provided to the South Carolina Department of Health and Environmental Control (DHEC) Home Health Care Services (HHCS) division and reported in professional papers. Data will be kept in my office under lock and key for the duration of the study.

Please retain this letter for future reference. If you have any questions concerning the study or for information concerning the results, you may contact me at:

326 Massingale Rd.
Columbia, S.C. 29210-4244
(803) 772-5613

Completion of the surveys will represent consent to participate in the study. Please seal the completed surveys in the enclosed envelope and return them to me whether or not you wish to complete the surveys. I appreciate your support in this important research.

Sincerely,

Mary Elizabeth Register, RN, BSN

Appendix C

Nurse Case Manager Demographic Survey

Survey # _____

Case Manager Demographic Survey

Please mark (✓) the appropriate response as applicable to your particular circumstances. Participation in this study is voluntary. Please direct questions or concerns to Beth Register, RN at: 772-5613 or e-mail: endoxie@aol.com.

1. Gender _____ 1. Male _____ 2. Female
2. Age (fill in the blank) _____
3. Years of professional RN practice (fill in the blank) _____
4. Highest level of education _____(1) AD _____(2) Diploma _____(3) BSN _____(4) MS/MSN _____(5) Ph.D.
5. Time of employment with DHEC home health (number of years) _____
6. Years of home health experience (total years) _____
7. District of employment _____
8. Name of home health office _____
9. Work status: _____ 1. Full Time _____ 2. Part Time
10. According to the Case Management Society of America (CMSA) (1998), case management is: "a collaborative process which assesses, plans, implements, monitors, and evaluates the options and services required to meet an individuals health needs, using communication and available resources to promote quality, cost-effective outcomes".

Based on the definition provided, I feel that I have the following level of understanding of the role of the case manager.

_____ (1) _____ (2) _____ (3) _____ (4) _____ (5)
No Idea Unclear Not too clear Clear Very clear

Information obtained in this survey will be used for research purposes only. All information will be kept confidential. Responses will not be shared with persons who are not directly involved with this study.

Appendix D

Alexander Structure Instrument (1986)

Survey # _____

Alexander Structure Instrument (1986)

The following questions are designed to measure the characteristics of the relationships between the personnel in home health agencies. Answer each question in one of five categories as is most representative of your agency.

The term "superior" in the questions refers to that individual or group of individuals who is/are the immediate supervisor(s).

	(1) Never	(2) Seldom	(3) Sometimes	(4) Often	(5) Always
1. I am not likely to express my feelings openly about my job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. In this work group, most people do not have a voice in decision making.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Several individuals have a say in making decisions in my work group.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I am encouraged to make suggestions in decisions relevant to my work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I am encouraged to speak my mind on the job even if it means disagreeing with my superior.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. My superior often seeks out my advice before decisions are made.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. In my work there are many people involved in decision making.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. My job is not clearly defined.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. I have to check with my superior before I do almost anything.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I do not share any influence with my superior in making decisions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. The superior in this group usually makes the decision himself/herself.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. There are rules and procedures for handling most kinds of problems which arise in decision making.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. I do not play an active role in making most decisions in my work group.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. The same rules and procedures are generally followed in making decisions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Information obtained in this survey will be used for research purposes only. All information will be kept confidential. Responses will not be shared with persons who are not directly involved with this study.

Appendix E
Social Support Outcome
(Johnson & Maas, 1997)

Survey # _____

Social Support Outcome

The following questions are designed to measure the degree of social support available for clients receiving home care services. Answer each of the questions in one of five categories as is most representative of your home health client.

Social Support

DEFINITION: Perceived availability and actual provision of reliable assistance from other persons

SOCIAL SUPPORT	None	Limited	Moderate	Substantial	Extensive
	1	2	3	4	5
INDICATORS:					
Reports of money provided by others	1	2	3	4	5
Reports of time provided by others	1	2	3	4	5
Reports of labor provided by others	1	2	3	4	5
Reports of information provided by others	1	2	3	4	5
Reports of emotional assistance provided by others	1	2	3	4	5
Reports of confidant relationship(s)	1	2	3	4	5
Reports of persons who can help when needed	1	2	3	4	5
Evidence of willingness to call on others for help	1	2	3	4	5
Reports of assistive social network	1	2	3	4	5
Reports of adequate supportive social contacts	1	2	3	4	5
Reports of stable social network	1	2	3	4	5
Reports of help offered by others	1	2	3	4	5
Other _____	1	2	3	4	5
Specify					

Information obtained in this survey will be used for research purposes only. All information will be kept confidential. Responses will not be shared with persons who are not directly involved with this study.

Appendix F
Patient Demographic Survey

Survey # _____

Patient Demographic Survey

Please mark (✓) the appropriate response as applicable to your particular circumstances. Participation in this study is voluntary. Please direct questions or concerns to Beth Register, RN at: 772-5613 or e-mail: endoxie@aol.com .

Name of DHEC home health office providing services:

Please provide the following information:

1. Gender (Circle one) _____ 1. Male _____ 2. Female
2. Age (fill in the blank) _____
3. Ethnic Background _____ 1. Black _____ 2. White _____ 3. Hispanic
(Circle one) _____ 4. Other

4. Educational Level:

Please mark (✓) by the highest grade completed.

- _____ Less than 4th grade
- _____ 5th - 8th grade
- _____ 9th grade
- _____ 10th grade
- _____ 11th grade
- _____ 12th grade
- _____ 1 year College _____ 2 years College
- _____ 3 years College _____ 4 years College _____ Graduate School

Information obtained in this survey will be used for research purposes only. All information will be kept confidential. Responses will not be shared with persons who are not directly involved with this study.

Appendix G

The Daily Hassles Scale

(Lazarus & Folkman, 1989)

Survey # _____

mind garden

The Daily Hassles Scale

Test Booklet

Directions:

Hassles are irritants that can range from minor annoyances to fairly major pressures, problems, or difficulties. They can occur few or many times in any given time period. Listed below are a number of ways in which a given person can feel hassled.

When you respond to the 117 items, you must have a specific time period in mind. Please consider hassles, which occurred during:

☐ Past Month

Read each item and circle **0** if the item was no hassle for you in the time period shown above. If it was a hassle, indicate how severe the hassle occurred by circling **1, 2, or 3**.

Range of Severity

Key: 0 = None or Did Not Occur 1 = Somewhat Severe 2 = Moderately Severe 3 = Extremely Severe

Please respond to every question and go to the next page to begin.

Information obtained in this survey will be used for research purposes only. All information will be kept confidential. Responses will not be shared with persons who are not directly involved with this study.

Survey # _____

0 = None or Did Not Occur 1 = Somewhat Severe 2 = Moderately Severe 3 = Extremely Severe

How much of a hassle was this for you?	Severity			
1. Misplacing or losing things	0	1	2	3
2. Troublesome neighbors	0	1	2	3
3. Social obligations	0	1	2	3
4. Inconsiderate smokers	0	1	2	3
5. Troubling thoughts about your future	0	1	2	3
6. Thoughts about death	0	1	2	3
7. Health of a family member	0	1	2	3
8. Not enough money for clothing	0	1	2	3
9. Not enough money for housing	0	1	2	3
10. Concerns about owing money	0	1	2	3
11. Concerns about getting credit	0	1	2	3
12. Concerns about money for emergencies	0	1	2	3
13. Someone owes you money	0	1	2	3
14. Financial responsibility for someone who doesn't live with you	0	1	2	3
15. Cutting down on electricity, water, etc.	0	1	2	3
16. Smoking too much	0	1	2	3
17. Use of alcohol	0	1	2	3
18. Personal use of drugs	0	1	2	3
19. Too many responsibilities	0	1	2	3
20. Decisions about having children	0	1	2	3
21. Nonfamily members living in your house	0	1	2	3
22. Care for pet	0	1	2	3
23. Planning meals	0	1	2	3
24. Concerned about the meaning of life	0	1	2	3
25. Trouble relaxing	0	1	2	3
26. Trouble making decisions	0	1	2	3
27. Problems getting along with fellow workers	0	1	2	3
28. Customers or clients give you a hard time	0	1	2	3
29. Home maintenance (inside)	0	1	2	3
30. Concerns about job security	0	1	2	3

Please go to next page.

Information obtained in this survey will be used for research purposes only. All information will be kept confidential. Responses will not be shared with persons who are not directly involved with this study.

Survey # _____

0 = None or Did Not Occur 1 = Somewhat Severe 2 = Moderately Severe 3 = Extremely Severe

How much of a hassle was this for you?	Severity			
31. Concerns about retirement.....	0	1	2	3
32. Laid-off or out of work	0	1	2	3
33. Don't like current work duties	0	1	2	3
34. Don't like fellow workers.....	0	1	2	3
35. Not enough money for basic necessities.....	0	1	2	3
36. Not enough money for food.....	0	1	2	3
37. Too many interruptions	0	1	2	3
38. Unexpected company	0	1	2	3
39. Too much time on hands.....	0	1	2	3
40. Having to wait	0	1	2	3
41. Concerns about accidents.....	0	1	2	3
42. Being lonely	0	1	2	3
43. Not enough money for health care	0	1	2	3
44. Fear of confrontation.....	0	1	2	3
45. Financial security	0	1	2	3
46. Silly practical mistakes	0	1	2	3
47. Inability to express yourself.....	0	1	2	3
48. Physical illness.....	0	1	2	3
49. Side effects of medication	0	1	2	3
50. Concerns about medical treatment	0	1	2	3
51. Physical appearance.....	0	1	2	3
52. Fear of rejection.....	0	1	2	3
53. Difficulties with getting pregnant.....	0	1	2	3
54. Sexual problems that result from physical problems	0	1	2	3
55. Sexual problems other than those resulting from physical problems.....	0	1	2	3
56. Concerns about health in general	0	1	2	3
57. Not seeing enough people	0	1	2	3
58. Friends or relatives too far away	0	1	2	3
59. Preparing meals.....	0	1	2	3
60. Wasting time	0	1	2	3

Please go to next page.

Information obtained in this survey will be used for research purposes only. All information will be kept confidential. Responses will not be shared with persons who are not directly involved with this study.

Survey # _____

0 = None or Did Not Occur 1 = Somewhat Severe 2 = Moderately Severe 3 = Extremely Severe

How much of a hassle was this for you?	Severity			
61. Auto maintenance	0	1	2	3
62. Filling out forms	0	1	2	3
63. Neighborhood deterioration	0	1	2	3
64. Financing children's education	0	1	2	3
65. Problems with employees	0	1	2	3
66. Problems on job due to being a woman or man	0	1	2	3
67. Declining physical abilities	0	1	2	3
68. Being exploited	0	1	2	3
69. Concerns about bodily functions	0	1	2	3
70. Rising prices of common goods	0	1	2	3
71. Not getting enough rest	0	1	2	3
72. Not getting enough sleep	0	1	2	3
73. Problems with aging parents	0	1	2	3
74. Problems with your children	0	1	2	3
75. Problems with persons younger than yourself	0	1	2	3
76. Problems with your lover	0	1	2	3
77. Difficulties seeing or hearing	0	1	2	3
78. Overloaded with family responsibilities	0	1	2	3
79. Too many things to do	0	1	2	3
80. Unchallenging work	0	1	2	3
81. Concerns about meeting high standards	0	1	2	3
82. Financial dealings with friends or acquaintances	0	1	2	3
83. Job dissatisfactions	0	1	2	3
84. Worries about decisions to change jobs	0	1	2	3
85. Trouble with reading, writing, or spelling abilities	0	1	2	3
86. Too many meetings	0	1	2	3
87. Problems with divorce or separation	0	1	2	3
88. Trouble with arithmetic skills	0	1	2	3
89. Gossip	0	1	2	3
90. Legal problems	0	1	2	3

Please go to next page.

Information obtained in this survey will be used for research purposes only. All information will be kept confidential. Responses will not be shared with persons who are not directly involved with this study.

Survey # _____

0 = None or Did Not Occur 1 = Somewhat Severe 2 = Moderately Severe 3 = Extremely Severe

How much of a hassle was this for you?	Severity			
91. Concerns about weight	0	1	2	3
92. Not enough time to do the things you need to do	0	1	2	3
93. Television	0	1	2	3
94. Not enough personal energy	0	1	2	3
95. Concerns about inner conflicts	0	1	2	3
96. Feel conflicted over what to do	0	1	2	3
97. Regrets over past decisions	0	1	2	3
98. Menstrual (period) problems	0	1	2	3
99. The weather	0	1	2	3
100. Nightmares	0	1	2	3
101. Concerns about getting ahead	0	1	2	3
102. Hassles from boss or supervisor	0	1	2	3
103. Difficulties with friends	0	1	2	3
104. Not enough time for family	0	1	2	3
105. Transportation problems	0	1	2	3
106. Not enough money for transportation	0	1	2	3
107. Not enough money for entertainment and recreation	0	1	2	3
108. Shopping	0	1	2	3
109. Prejudice and discrimination from others	0	1	2	3
110. Property, investments, or taxes	0	1	2	3
111. Not enough time for entertainment and recreation	0	1	2	3
112. Yardwork or outside home maintenance	0	1	2	3
113. Concerns about news events	0	1	2	3
114. Noise	0	1	2	3
115. Crime	0	1	2	3
116. Traffic	0	1	2	3
117. Pollution	0	1	2	3

Information obtained in this survey will be used for research purposes only. All information will be kept confidential. Responses will not be shared with persons who are not directly involved with this study.

Appendix H
The SF-36™ Health Survey
(Ware, 1998a)

Survey # _____

The SF-36™ Health Survey

Instructions for Completing the Questionnaire

Please answer every question. Some questions may look like others, but each one is different. Please take the time to read and answer each question carefully by filling in the bubble that best represents your response.

EXAMPLE

This is for your review. Do not answer this question. The questionnaire begins with the section **Your Health in General** below.

For each question you will be asked to fill in a bubble in each line:

1. How strongly do you agree or disagree with each of the following statements?

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
a) I enjoy listening to music.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) I enjoy reading magazines.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please begin answering the questions now.

Your Health in General

1. In general, would you say your health is:

Excellent	Very good	Good	Fair	Poor
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Compared to one year ago, how would you rate your health in general now?

Much better now than one year ago	Somewhat better now than one year ago	About the same as one year ago	Somewhat worse now than one year ago	Much worse now than one year ago
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please turn the page and continue.

Information obtained in this survey will be used for research purposes only. All information will be kept confidential. Responses will not be shared with persons who are not directly involved with this study.

Survey # _____

3. The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

	Yes, Limited a lot	Yes, limited a little	No, not limited at all
a) Vigorous activities , such as running, lifting heavy objects, participating in strenuous sports	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Moderate activities , such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Lifting or carrying groceries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Climbing several flights of stairs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Climbing one flight of stairs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Bending, kneeling, or stooping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Walking more than a mile	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) Walking several blocks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i) Walking one block	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j) Bathing or dressing yourself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. During the **past 4 weeks**, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	Yes	No
a) Cut down on the amount of time you spent on work or other activities	<input type="radio"/>	<input type="radio"/>
b) Accomplished less than you would like	<input type="radio"/>	<input type="radio"/>
c) Were limited in the kind of work or other activities	<input type="radio"/>	<input type="radio"/>
d) Had difficulty performing the work or other activities (for example, it took extra time)	<input type="radio"/>	<input type="radio"/>

5. During the **past 4 weeks**, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	Yes	No
a) Cut down on the amount of time you spent on work or other activities	<input type="radio"/>	<input type="radio"/>
b) Accomplished less than you would like	<input type="radio"/>	<input type="radio"/>
c) Didn't do work or other activities as carefully as usual	<input type="radio"/>	<input type="radio"/>

Please turn the page to continue.

SF-36™ - © Medical Outcomes Trust and John E. Ware, Jr. - All Rights Reserved - Page 2 of 3

Information obtained in this survey will be used for research purposes only. All information will be kept confidential. Responses will not be shared with persons who are not directly involved with this study.

Survey # _____

6. During the **past 4 weeks**, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?

Not at all Slightly Moderately Quite a bit Extremely

☐ ☐ ☐ ☐ ☐

7. How much bodily pain have you had during the **past 4 weeks**?

None Very mild Mild Moderate Severe Very severe

☐ ☐ ☐ ☐ ☐ ☐

8. During the **past 4 weeks**, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all A little bit Moderately Quite a bit Extremely

☐ ☐ ☐ ☐ ☐

9. These questions are about how you feel and how things have been with you during the **past 4 weeks**. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the **past 4 weeks**...

All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time
-----------------	------------------	------------------------	------------------	----------------------	------------------

- | | | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| a) did you feel full of pep? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) have you been a very nervous person? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) have you felt so down in the dumps nothing could cheer you up? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) have you felt calm and peaceful? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) did you have a lot of energy? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) have you felt downhearted and blue? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) did you feel worn out? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) have you been a happy person? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) did you feel tired? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

10. During the **past 4 weeks**, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

All of the time Most of the time Some of the time A little of the time None of the time

☐ ☐ ☐ ☐ ☐

11. How TRUE or FALSE is each of the following statements for you?

Definitely true	Mostly true	Don't know	Mostly false	Definitely false
-----------------	-------------	------------	--------------	------------------

- | | | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| a) I seem to get sick a little easier than other people | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) I am as healthy as anybody I know | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) I expect my health to get worse | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) My health is excellent | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

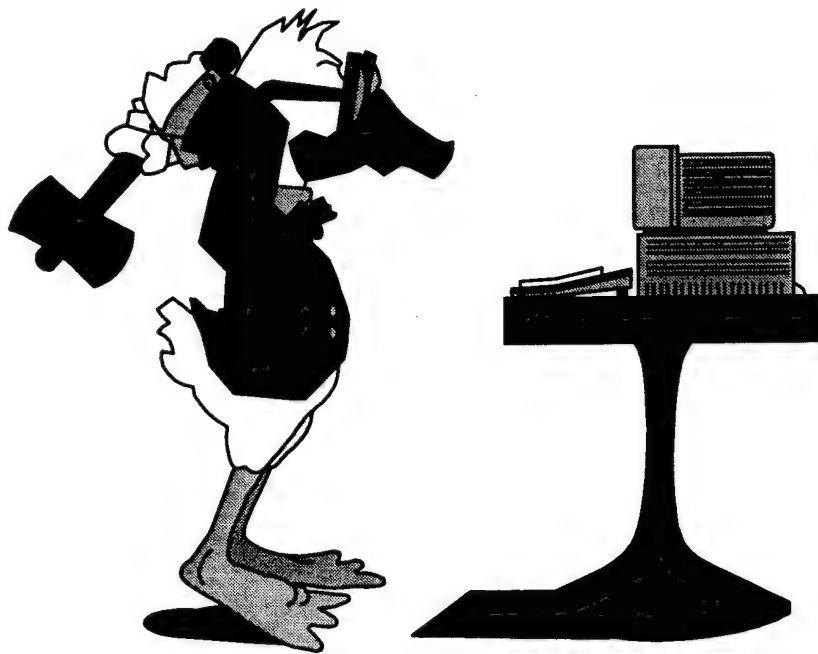
THANK YOU FOR COMPLETING THIS QUESTIONNAIRE!

Information obtained in this survey will be used for research purposes only. All information will be kept confidential. Responses will not be shared with persons who are not directly involved with this study.

Appendix I
Summary of Scoring for the SF-36™ Health Survey
(Ware, 1993, 1994)

Scoring the SF-36™ Simplified

(Well, almost.) ☺



The Graduate Student's Survival Kit

Adapted from:

SF-36™ Health Survey Manual & Interpretation Guide

(Ware, 1993)

SF-36™ Physical & Mental Health Summary Scales: A Users

Manual (Ware, 1994)

Synopsis of SF-36™ Scoring

To gain a clear perspective of the ease of scoring the SF-36™ Health Survey (Ware, 1993) using hand calculations, recall the story of a very small insect (the ant) who tried to move a *hevea brasiliensis* (rubber tree plant). Manual calculation of the SF-36™ is possible; however, accurate scoring of the SF-36™ without the benefit of computer-generated software, is a lot like ants moving rubber tree plants. The task is tedious and requires a great deal of tenacity, determination, and considerable high hopes.

As with all standardized tests, changes in the content of the SF-36™ Health Survey or in scoring algorithms may compromise the reliability and validity of scores. Changes could also potentially bias scores enough to invalidate normative comparisons and prevent comparison of results across studies (Ware, 1993).

All SF-36 items and scales are scored such that a higher score indicates a better health state. For instance, functioning scales are scored so that a high score indicates better functioning and the pain scale is scored such that a high score indicates freedom from pain (Ware, 1993). Items and scales are scored in three steps:

1. Item recoding, for the items that require recoding
2. Computing scale scores by summing across items in the same scale (raw scale scores)
3. Transforming raw scale scores to a 0-100 scale (transformed scale scores)

Ware (1993) and colleagues recommend that item recoding and scale scoring be accomplished on computer-generated software that is available from *The Health Institute at New England Medical Center* or other affiliated organizations. However, manual calculation of the SF-36™ Health Survey is possible, although not recommended for the faint hearted. The remaining two sections provides an overview of information pertinent to scoring the SF-36™ using computer generated software and scoring the SF-36™ manually.

Computer Generated Scoring

Problems with data entry may be discovered during the scoring process. Ware (1993) and colleagues provide the following recommendations to address the more common coding problems (p. 6:3-6:4):

- If a respondent marks two responses, which are adjacent to each other, randomly pick one and enter that number.
- If a respondent marks two responses for an item and the items are not adjacent to each other, code that item as "missing". (do not enter a score)
- If a respondent marks three or more responses for an item, code that item as "missing".
- If a respondent answers the "yes/no" items by writing in "yes" or "no", code the answer as though "yes" or "no" had been marked.

Item Recoding

All 36 items should be checked for out-of-range values prior to assigning final values. Out-of-range values are scores that are lower than an item's precoded minimum value or higher than an item's precoded maximum value. Out-of-range values are typically caused by data-entry errors, and should be changed to the correct response through verification with the original survey.

Computer generated programs are formatted to compute raw scores for the eight subscales to a 0-100 scale. No further manipulation of the data is required for the computer-generated process (using the eight health subscales).

Transformation of the eight health subscales to summary component scales, such as the mental component summary (MCS) and physical component summary (PCS) is facilitated by additional computer generated software available at <http://www.info@sf-36.com>. The steps involved in the manual transformation of the PCS and MCS scales are discussed later in this section.

Manual Calculation of the Eight SF-36™ Subscales

The next phase after data entry involves the recoding of response choices from the precoded item value to the final item value. Tables 27 through 36 contain scoring information for the items used in each of the eight SF-36™ health scales and the health transition item (item #2). Each table provides the verbatim content of each question,

response choices, and the precoded values printed in the questionnaire and the final values for scoring each item. Item numbers in Tables 27 through 36 correspond to the items on the standard SF-36™ Health Survey identified in Table 5.

Table 27.

Physical Functioning: Verbatim Items and Scoring Information

Verbatim Items

- 3a. Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports
- 3b. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf
- 3c. Lifting or carrying groceries
- 3d. Climbing several flights of stairs
- 3e. Climbing one flight of stairs
- 3f. Bending, kneeling, or stooping
- 3g. Walking more than a mile
- 3h. Walking several blocks
- 3i. Walking one block
- 3j. Bathing or dressing yourself

Precoded and Final Values for Items 3a - 3j

<u>Response Choices</u>	<u>Precoded Item Value</u>	<u>Final Item Value</u>
Yes, limited a lot	1	1
Yes, limited a little	2	2
No, not limited at all	3	3

Scale Scoring

Compute the simple algebraic sum of the final item scores as shown in Table 6.11. See text for handling of missing item responses. This scale is scored so that a high score indicates better physical functioning.

Note. Precoded values are as shown on the appended form. This scale does not require recoding of items prior to computation of the scale score.

Table 28.

Role-Physical: Verbatim Items and Scoring Information

Verbatim Items

- 4a. Cut down the amount of time you spent on work or other activities
- 4b. Accomplished less than you would like
- 4c. Were limited in the kind of work or other activities
- 4d. Had difficulty performing the work or other activities (for example, it took extra effort)

Precoded and Final Values for Items 4a - 4d

<u>Response Choices</u>	<u>Precoded Item Value</u>	<u>Final Item Value</u>
Yes	1	1
No	2	2

Scale Scoring

Compute the simple algebraic sum of the final item values as shown in Table 6.11. See text for handling of missing item responses. This scale is scored so that a high score indicates better Role-Physical functioning.

Note. Precoded values are as shown on the appended form. This scale does not require recoding of items prior to computation of the scale score.

Table 29.

Bodily Pain: Verbatim Items and Scoring Information

Verbatim Items

7. How much bodily pain have you had during the past 4 weeks?
8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

Precoded and Final Values for Item 7

Response Choices	Precoded Item Value	Final Item Value
None	1	6.0
Very mild	2	5.4
Mild	3	4.2
Moderate	4	3.1
Severe	5	2.2
Very severe	6	1.0

Scoring for Item 8 — if both Items 7 and 8 are answered

Response Choices	If Item 8 Precoded Item Value	and Item 7 Precoded Item Value	then Item 8 Final Item Value
Not at all	1	1	6
Not at all	1	2 through 6	5
A little bit	2	1 through 6	4
Moderately	3	1 through 6	3
Quite a bit	4	1 through 6	2
Extremely	5	1 through 6	1

Scoring for Item 8 — if Item 7 is not answered

Response Choices	Precoded Item Value	Final Item Value
Not at all	1	6.0
A little bit	2	4.75
Moderately	3	3.5
Quite a bit	4	2.25
Extremely	5	1.0

Scale Scoring

Compute the simple algebraic sum of final item values as shown in Table 6.11. See text for handling of missing item responses. This scale is scored positively so that a high score indicates lack of bodily pain.

Note. Precoded values are as shown on the appended form. This scale requires recoding of both items prior to computation of the scale score.

Table 30.

General Health: Verbatim Items and Scoring Information

Verbatim Items

1. In general, would you say your health is:
- 11a. I seem to get sick a little easier than other people
- 11b. I am as healthy as anybody I know
- 11c. I expect my health to get worse
- 11d. My health is excellent

Precoded and Final Values for Items 1 & 11a-11d

Item 1	Response Choices	Precoded Item Value	Final Item Value
	Excellent	1	5.0
	Very good	2	4.4
	Good	3	3.4
	Fair	4	2.0
	Poor	5	1.0

Items 11a & 11c	Response Choices	Precoded Item Value	Final Item Value
	Definitely True	1	1
	Mostly True	2	2
	Don't Know	3	3
	Mostly False	4	4
	Definitely False	5	5

Items 11b & 11d	Response Choices	Precoded Item Value	Final Item Value
	Definitely True	1	5
	Mostly True	2	4
	Don't Know	3	3
	Mostly False	4	2
	Definitely False	5	1

Scale Scoring

Compute the simple algebraic sum of the final item values as shown in Table 6.11. See text for handling of missing item responses. This scale is scored so that a high score indicates better general health perceptions.

Note. Precoded values are as shown on the appended form. This scale requires recoding of three items prior to computation of the scale score.

Table 31.

Vitality: Verbatim Items and Scoring Information

Verbatim Items

- 9a. Did you feel full of pep?
 9e. Did you have a lot of energy?
 9g. Did you feel worn out?
 9i. Did you feel tired?

Precoded and Final Values for Items 9a, 9e, 9g, & 9i

Items 9a & 9e	Response Choices	Precoded Item Value	Final Item Value
	All of the time	1	6
	Most of the time	2	5
	A good bit of the time	3	4
	Some of the time	4	3
	A little of the time	5	2
	None of the time	6	1

Items 9g & 9i	Response Choices	Precoded Item Value	Final Item Value
	All of the time	1	1
	Most of the time	2	2
	A good bit of the time	3	3
	Some of the time	4	4
	A little of the time	5	5
	None of the time	6	6

Scale Scoring

Compute the simple algebraic sum of the final item values as shown in Table 6.11. See text for handling of missing item responses. This scale is scored so that a high score indicates more vitality.

Note. Precoded values are as shown on the appended form. This scale requires recoding of two items prior to computation of the scale score.

Table 32.

Social Functioning: Verbatim Items and Scoring Information

Verbatim Items

6. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?
10. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

Precoded and Final Values for Items 6 & 10

Item 6	Response Choices	Precoded Item Value	Final Item Value
	Not at all	1	5
	Slightly	2	4
	Moderately	3	3
	Quite a bit	4	2
	Extremely	5	1

Item 10	Response Choices	Precoded Item Value	Final Item Value
	All of the time	1	1
	Most of the time	2	2
	Some of the time	3	3
	A little of the time	4	4
	None of the time	5	5

Scale Scoring

Compute the simple algebraic sum of the final item values as shown in Table 6.11. See text for handling of missing item responses. This scale is scored so that a high score indicates better social functioning.

Note. Precoded values are as shown on the appended form. This scale requires recoding of one item prior to computation of the scale score.

Table 33.

Role-Emotional: Verbatim Items and Scoring Information

Verbatim Items

- 5a. Cut down the amount of time you spent on work or other activities
5b. Accomplished less than you would like
5c. Didn't do work or other activities as carefully as usual

Precoded and Final Values for Items 5a - 5c

<u>Response Choices</u>	<u>Precoded Item Value</u>	<u>Final Item Value</u>
Yes	1	1
No	2	2

Scale Scoring

Compute the simple algebraic sum of the final item values as shown in Table 6.11. See text for handling of missing item responses. This scale is scored so that a high score indicates better Role-Emotional functioning.

Note. Precoded values are as shown on the appended form. This scale does not require recoding of items prior to computation of the scale score.

Table 34.

Mental Health: Verbatim Items and Scoring Information

Verbatim Items

- 9b. Have you been a very nervous person?
- 9c. Have you felt so down in the dumps that nothing could cheer you up?
- 9d. Have you felt calm and peaceful?
- 9f. Have you felt downhearted and blue?
- 9h. Have you been a happy person?

Precoded and Final Values for Items 9b, 9c, 9d, 9f, & 9h

Items 9b, 9c, & 9f	Response Choices	Precoded Item Value	Final Item Value
	All of the time	1	1
	Most of the time	2	2
	A good bit of the time	3	3
	Some of the time	4	4
	A little of the time	5	5
	None of the time	6	6

Items 9d & 9h	Response Choices	Precoded Item Value	Final Item Value
	All of the time	1	6
	Most of the time	2	5
	A good bit of the time	3	4
	Some of the time	4	3
	A little of the time	5	2
	None of the time	6	1

Scale Scoring

Compute the simple algebraic sum of the final item values as shown in Table 6.11. See the text for handling of missing item responses. This scale is scored so that a high score indicates better mental health.

Note. Precoded values are as shown on the appended form. This scale requires recoding of two items prior to computation of the scale score.

Table 35.

Reported Health Transition: Verbatim Items and Scoring
Information

Verbatim Item

2. Compared to one year ago, how would you rate your health in general now?

Precoded and Final Values for Item 2

<u>Response Choices</u>	<u>Precoded Item Value</u>
Much better now than one year ago	1
Somewhat better now than one year ago	2
About the same as one year ago	3
Somewhat worse now than one year ago	4
Much worse now than one year ago	5

Note. Precoded item values are as shown on the appended form. The average measured change in health for respondents selecting each response choice is presented in Chapter 9.

If a respondent leaves one or more items in a scale blank, then a psychometrically sound item estimate can be made by estimating the average score across completed items in the same scale, for that particular respondent. For example, if a study participant leaves one item in the 5-item Mental Health scale blank, simply substitute the participant's average score (average of the four completed mental health items) assign the average value to the missing item (Ware, 1993).

Computing Raw Scale Scores

After item recoding, including handling of missing data is accomplished; a raw score is computed for each of the eight health scales. The raw score represents the simple algebraic sum of the responses for all items in the subscales as illustrated in Table 36. For example, the raw scale score for the Role-Physical scale is the sum of the final scores for Items 4a, 4b, 4c, and 4d. Recoded values and imputed values are inserted wherever applicable during this phase (Ware, 1993). The next step involves transforming each raw scale score into a 0 to 100 scale using the following formula (p. 6:17):

$$\text{Transformed Scale} = \left[\frac{(\text{Actual raw score} - \text{lowest possible raw score})}{\text{Possible raw score range}} \right] \times 100$$

A summary of the actual process used to transform SF=36™ Health Survey Scores from raw scores to the required 0-100 standardized scale is provided in Table 36. An example is provided to illustrate the actual steps involved in converting scores.

Table 36.

Formulas for Scoring and Transforming Scales

Scale	Sum Final Item Values (after recoding items as in Tables 6.1-6.8)	Lowest and highest possible raw scores	Possible raw score range
Physical Functioning	3a+3b+3c+3d+3e+3f+3g+3h+3i+3j	10, 30	20
Role-Physical	4a+4b+4c+4d	4, 8	4
Bodily Pain	7+8	2, 12	10
General Health	1+11a+11b+11c+11d	5, 25	20
Vitality	9a+9e+9g+9i	4, 24	20
Social Functioning	6+10	2, 10	8
Role-Emotional	5a+5b+5c	3, 6	3
Mental Health	9b+9c+9d+9f+9h	5, 30	25

Formula and example for transformation of raw scale scores

$$\text{Transformed Scale} = \left[\frac{(\text{Actual raw score} - \text{lowest possible raw score})}{\text{Possible raw score range}} \right] \times 100$$

Example: A Physical Functioning raw score of 21 would be transformed as follows:

$$\left[\frac{(21 - 10)}{20} \right] \times 100 = 55$$

Where lowest possible score = 10 and possible raw score range = 20

Raw and transformed scale scores are not required for the Reported Health Transition item (Item #2), because this scale consists of only one item and is not included in the eight principle health concepts. The Reported Health

Transition item is useful in longitudinal studies. Ware (1993) and colleagues recommend treating responses to the Reported Health Transition item as ordinal data during data analysis.

Scoring Checks

Errors can occur during any phase of instrument scoring. Therefore, Ware (1993) and colleagues strongly recommend formal scoring checks prior to using the data obtained on the subscales. Ware offers the following tips for checking scores:

- After items have been recoded and scales scores have been computed, inspect the correlation between each scale and its component items to verify that all correlations are positive in direction and substantial in magnitude (0.30 or higher) (refer to Table 6 for a summary of item correlations).
- Check correlations with the General Health scale and the other seven scales to verify that all are positive; with rare exception all should be substantial in magnitude (0.30 or higher).

A summary of the steps involved in scoring the SF-36™ Health Survey is provided in Figure 4. The flowchart provides a review of each of the required scoring phases.

Flowchart of the SF-36™ Health Survey Scoring Process:

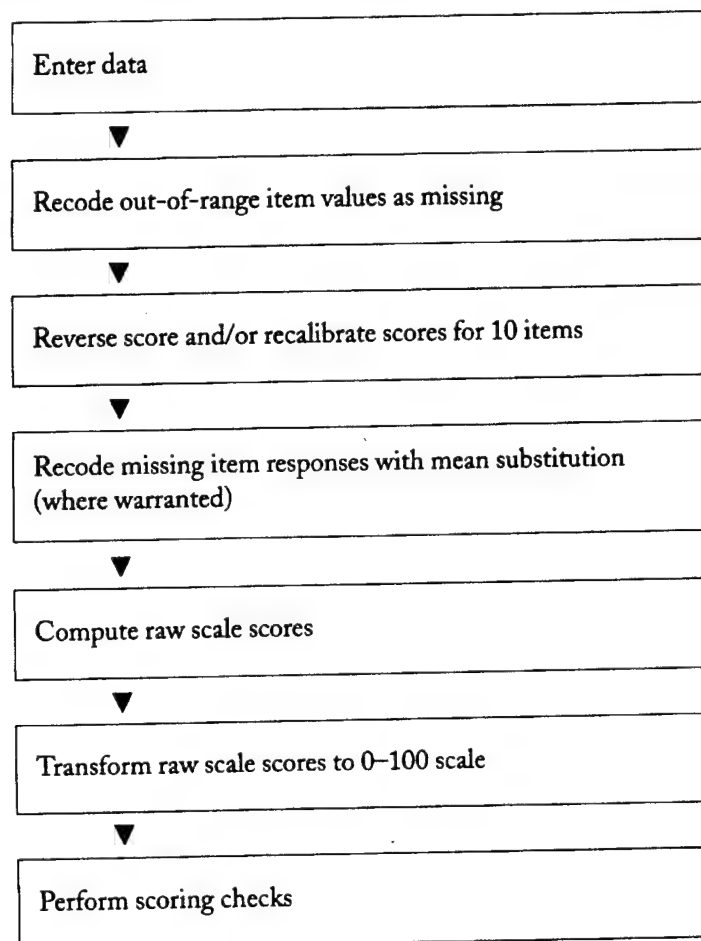


Figure 4. SF-36™ Scoring Process (Ware, 1993, p. 6:2)

Scoring of PCS and MCS Scales

Scoring of the Physical (PCS) and Mental (MCS) Component Summary measures requires three steps. First, the eight SF-36™ subscales are standardized using means and standard deviations from the general U.S. population. Next, scores are aggregated using weights (factor score coefficients) from the U.S. population. Finally, aggregate PCS and MCS scores are standardized using a linear T-score transformation to establish a mean of 50 with a standard deviation of 10, in the general U.S. population (Ware, 1994).

General U.S. population statistics used in the standardization and in the aggregation of SF-36™ subscale scores are provided in Table 37.

Table 37.

General U.S. Population Means, Standard Deviations and Factor Score Coefficients used to Derive PCS and MCS Scale Scores (Ware, 1994, p.4:1)

SF-36 Scale	Mean	SD	Factor Score Coefficients	
			PCS	MCS
PF	84.52404	22.89490	0.42402	-0.22999
RP	81.19907	33.79729	0.35119	-0.12329
BP	75.49196	23.55879	0.31754	-0.09731
GH	72.21316	20.16964	0.24954	-0.01571
VT	61.05453	20.86942	0.02877	0.23534
SF	83.59753	22.37642	-0.00753	0.26876
RE	81.29467	33.02717	-0.19206	0.43407
MH	74.84212	18.01189	-0.22069	0.48581

As with scoring the SF-36™ eight subscale items and scales, which are aggregated to score the summary measures, standardization of PCS and MCS scales is vital to accurate interpretation. Any changes in scoring the items, scales, or algorithms for the summary components may alter the instrument reliability and validity (Ware, 1994).

The PCS and MCS scales are scored using norm-based methods. Standard deviations and factor score coefficients that are used in scoring are derived from the general U.S. population. A linear T-score transformation method is used so that the PCS and MCS scores have a mean of 50 and a standard deviation of 10 in the general U.S. population. This score transformation is in addition to the 0-100 score transformation used for the eight health subscales. Norm based scoring provides standardization and comparisons across populations and provide meaningful comparisons by age, diagnosis, or other variables. Interpretation of scores is made simple, because all scores above 50 are considered above the average score in the U.S. population, and all scores below 50 are considered below the average score in the U.S. population (Ware, 1994). Computer generated software programs offer tremendous utility in transforming scores accurately and effortlessly.

Steps in Scoring MCS and PCS Scales

First each SF-36™ scale is standardized using a z-score transformation and SF-36™ scale means and standard deviations from the general U.S. population previously

illustrated in Table 37. Client z-scores for each scale are computed by subtracting the general U.S. population mean from each SF-36™ scale score and dividing the difference by the corresponding scale standard deviation from the general U.S. population. Formulas for obtaining z-scores are as shown in Step 1:

Step 1:

Formulas for z-score standardization:

$$PF_Z = (PF - 84.52404) / 22.89490$$

$$RP_Z = (RP - 81.19907) / 33.79729$$

$$BP_Z = (BP - 75.49196) / 23.55879$$

$$GH_Z = (GH - 72.21316) / 20.16964$$

$$VT_Z = (VT - 61.05453) / 20.86942$$

$$SF_Z = (SF - 83.59753) / 22.37642$$

$$RE_Z = (RE - 81.29467) / 33.02717$$

$$MH_Z = (MH - 74.84212) / 18.01189$$

The means and standard deviations are extracted from the values in Table 37.

Aggregation of Scores

Once z-scores are computed for each SF-36™ scale, the next step involves computation of aggregate scores for the PCS and MCS components using the physical and mental factor score coefficients from the general U.S. population as provided in Table 37. Computation of aggregate physical component score involves multiplying each SF-36™ scale z-score by its respective physical factor score coefficient and summing the eight products as shown in Step 2:

Step 2:

Formula for aggregating standardized scales in estimating aggregate physical and mental component scores:

$$\begin{aligned} \text{AGG_PHYS} = & (\text{PF_Z} * .42402) + (\text{RP_Z} * .35119) + (\text{BP_Z} * .31754) \\ & + (\text{GH_Z} * .24954) + (\text{VT_Z} * .02877) + (\text{SF_Z} * -.00753) + (\text{RE_Z} \\ & * -.19206) + (\text{MH_Z} * -.22069) \end{aligned}$$

$$\begin{aligned} \text{AGG_MENT} = & (\text{PF_Z} * -.22999) + (\text{RP_Z} * -.12329) + \\ & (\text{BP_Z} * -.09731) + (\text{GH_Z} * -.01571) + (\text{VT_Z} * .23534) + (\text{SF_Z} * \\ & .26876) + (\text{RE_Z} * .43407) + (\text{MH_Z} * .48581) \end{aligned}$$

Aggregate mental component scores are obtained by multiplying each SF-36™ scale z-score by its respective mental factor score coefficient and summing the eight products (see Step 2) (Ware, 1994, p. 4:3).

Transformation of Summary Scores

The third step consists of transforming each component score to the norm-based (50,10) scoring. Scores are transformed by multiplying each aggregate component scale score by 10 and adding the resulting product to 50. The formula for achieving the t-score transformation is illustrated in Step 3:

Step 3.

Formulas for t-score transformation of component scores:

$$\text{Transformed Physical (PCS)} = 50 + (\text{AGG_PHYS} * 10)$$

$$\text{Transformed Mental (MCS)} = 50 + (\text{AGG_MENT} * 10)$$

Ware (1994) and colleagues recommend the following scoring checks for the SF-36™ PCS and MCS component summary scales:

- Check correlations between the eight SF-36™ subscales and the PCS and MCS scales. The Physical Functioning (PF), Role-Physical (RP), and Bodily Pain (BP) scales should correlate highest with the PCS and lowest with the MCS scores. The Mental Health (MH), Role-Emotional (RE), and Social Functioning (SF) should correlate highest with the MCS and lowest with the PCS scores. The General Health (GH) and Vitality (VT) scales should correlate moderately with both the physical and mental component summary scales.
- Check correlation between the physical and mental component summary scales. The correlation between the MCS and PCS should be very low.

Clearly, scoring the SF-36™ requires meticulous attention to detail and a solid understanding in statistical procedures. The SAS code for scoring the SF-36™ PCS and MCS summary scales is available in electronic format via email request to <http://www.info@sf-36.com>. The SAS code begins with algorithms for scoring the SF-36™ subscales and ends with the computation of the PCS and MCS component summary scales (Ware, 1994).